NATA LIGHTING CO.,LTD.
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Address:380JinOu Road,GaoXin Zone,Jiang Men City,Guangdong,China

## Nata

LumCAT: 2-2323-M
Luminaire: 92.70.135.00
Report No: 210806-B014
Test No: 210806-C014
LampCAT: LUMILEDS LUXEON CoB 1205 ES 3
Lamp flux(lm): 2254.2
Number of Lamps: 1
Length(mm): 570
Phm Type: C

Voltage(V): 35.0100
Current(A): 0.4510
Power (W): 15.7890
PF: 0.0000
Ballast type: DC
Width(mm): 45
Height(mm): 20

## Photometric Results

Lumens(lm): 2030.79
Efficiency(%): 90.09%
Lumens(lm)/Power(W): 128.62
Central intensity(cd): 2452.259
Maximum intensity(cd): 4394.228
Angle of maximum intensity: C=90.0 γ=16.0
Beam Angle(50%Imax): [C0/180]Total=48.3
[C90/270]Total=35.0
Field angle(10%Imax): [C0/180]Total=65.7
[C90/270]Total=59.9
Maximum s/h(1/2): C0_180=0.69 C90_270=1.06
Maximum s/h(1/4): C0_180=0.71 C90_270=0.86
Up flux rate of lamp(%): 0.00%
Down flux rate of lamp(%): 90.09%
Up flux rate of LUM(%): - -
Down flux rate of LUM(%): 100.00%
CIE Type : Direct lighting
Output flux ratio in π solid angle : 98.127%

## Zonal flux distribution table



| γ(°) | Average I(cd) | Zonal F(lm) | Sum F(lm) | Eff Flux(%) | Eff Sum(%) |
|---|---|---|---|---|---|
| 0.0 | 2504.169 | 0.000 | 0 | .000% | .000% |
| 1.0 | 2504.730 | 2.397 | 2.397 | .106% | .118% |
| 2.0 | 2508.501 | 7.195 | 9.592 | .319% | .472% |
| 3.0 | 2517.539 | 12.021 | 21.613 | .533% | 1.064% |
| 4.0 | 2535.129 | 16.913 | 38.526 | .750% | 1.897% |
| 5.0 | 2560.262 | 21.920 | 60.446 | .972% | 2.976% |
| 6.0 | 2600.073 | 27.119 | 87.565 | 1.203% | 4.312% |
| 7.0 | 2630.285 | 32.465 | 120.029 | 1.440% | 5.910% |
| 8.0 | 2660.722 | 37.867 | 157.896 | 1.680% | 7.775% |
| 9.0 | 2687.125 | 43.341 | 201.238 | 1.923% | 9.909% |
| 10.0 | 2703.632 | 48.784 | 250.022 | 2.164% | 12.312% |
| 11.0 | 2710.167 | 54.095 | 304.117 | 2.400% | 14.975% |
| 12.0 | 2704.454 | 59.190 | 363.306 | 2.626% | 17.890% |
| 13.0 | 2682.420 | 63.929 | 427.235 | 2.836% | 21.038% |
| 14.0 | 2652.020 | 68.280 | 495.515 | 3.029% | 24.400% |
| 15.0 | 2605.152 | 72.173 | 567.688 | 3.202% | 27.954% |
| 16.0 | 2543.158 | 75.437 | 643.125 | 3.347% | 31.669% |
| 17.0 | 2461.483 | 77.936 | 721.061 | 3.457% | 35.506% |
| 18.0 | 2374.580 | 79.736 | 800.797 | 3.537% | 39.433% |
| 19.0 | 2282.748 | 81.028 | 881.825 | 3.595% | 43.423% |
| 20.0 | 2189.421 | 81.853 | 963.678 | 3.631% | 47.453% |
| 21.0 | 2079.838 | 81.978 | 1045.657 | 3.637% | 51.490% |
| 22.0 | 1990.757 | 81.800 | 1127.457 | 3.629% | 55.518% |
| 23.0 | 1883.647 | 81.295 | 1208.753 | 3.606% | 59.521% |
| 24.0 | 1777.417 | 80.044 | 1288.797 | 3.551% | 63.463% |
| 25.0 | 1664.391 | 78.259 | 1367.056 | 3.472% | 67.316% |
| 26.0 | 1542.835 | 75.707 | 1442.763 | 3.358% | 71.044% |
| 27.0 | 1415.767 | 72.383 | 1515.146 | 3.211% | 74.609% |
| 28.0 | 1267.366 | 67.931 | 1583.077 | 3.014% | 77.954% |
| 29.0 | 1130.062 | 62.723 | 1645.8 | 2.783% | 81.042% |
| 30.0 | 986.076 | 57.135 | 1702.936 | 2.535% | 83.856% |
| 31.0 | 843.633 | 50.918 | 1753.854 | 2.259% | 86.363% |
| 32.0 | 702.702 | 44.301 | 1798.154 | 1.965% | 88.545% |
| 33.0 | 578.091 | 37.733 | 1835.887 | 1.674% | 90.403% |
| 34.0 | 446.746 | 31.015 | 1866.902 | 1.376% | 91.930% |
| 35.0 | 362.409 | 25.129 | 1892.031 | 1.115% | 93.167% |
| 36.0 | 263.865 | 19.941 | 1911.972 | .885% | 94.149% |
| 37.0 | 198.697 | 15.086 | 1927.058 | .669% | 94.892% |

## Zonal flux distribution table



| γ(°) | Average I(cd) | Zonal F(lm) | Sum F(lm) | Eff Flux(%) | Eff Sum(%) |
|---|---|---|---|---|---|
| 38.0 | 148.157 | 11.578 | 1938.635 | .514% | 95.462% |
| 39.0 | 106.958 | 8.708 | 1947.343 | .386% | 95.891% |
| 40.0 | 79.038 | 6.487 | 1953.83 | .288% | 96.210% |
| 41.0 | 60.716 | 4.977 | 1958.807 | .221% | 96.455% |
| 42.0 | 47.634 | 3.937 | 1962.743 | .175% | 96.649% |
| 43.0 | 38.096 | 3.176 | 1965.919 | .141% | 96.806% |
| 44.0 | 31.460 | 2.625 | 1968.544 | .116% | 96.935% |
| 45.0 | 27.034 | 2.248 | 1970.792 | .100% | 97.046% |
| 46.0 | 24.103 | 2.000 | 1972.792 | .089% | 97.144% |
| 47.0 | 21.556 | 1.816 | 1974.608 | .081% | 97.233% |
| 48.0 | 19.894 | 1.676 | 1976.284 | .074% | 97.316% |
| 49.0 | 18.423 | 1.573 | 1977.857 | .070% | 97.393% |
| 50.0 | 17.500 | 1.498 | 1979.355 | .066% | 97.467% |
| 51.0 | 16.791 | 1.451 | 1980.806 | .064% | 97.539% |
| 52.0 | 16.186 | 1.415 | 1982.221 | .063% | 97.608% |
| 53.0 | 15.648 | 1.385 | 1983.605 | .061% | 97.677% |
| 54.0 | 15.192 | 1.359 | 1984.965 | .060% | 97.743% |
| 55.0 | 14.770 | 1.337 | 1986.302 | .059% | 97.809% |
| 56.0 | 14.438 | 1.320 | 1987.622 | .059% | 97.874% |
| 57.0 | 14.087 | 1.304 | 1988.926 | .058% | 97.939% |
| 58.0 | 13.773 | 1.288 | 1990.215 | .057% | 98.002% |
| 59.0 | 13.515 | 1.276 | 1991.49 | .057% | 98.065% |
| 60.0 | 13.276 | 1.266 | 1992.756 | .056% | 98.127% |
| 61.0 | 13.101 | 1.259 | 1994.015 | .056% | 98.189% |
| 62.0 | 12.940 | 1.255 | 1995.27 | .056% | 98.251% |
| 63.0 | 12.895 | 1.257 | 1996.526 | .056% | 98.313% |
| 64.0 | 12.963 | 1.269 | 1997.795 | .056% | 98.375% |
| 65.0 | 12.996 | 1.285 | 1999.08 | .057% | 98.439% |
| 66.0 | 13.019 | 1.298 | 2000.378 | .058% | 98.502% |
| 67.0 | 12.959 | 1.306 | 2001.684 | .058% | 98.567% |
| 68.0 | 12.907 | 1.310 | 2002.994 | .058% | 98.631% |
| 69.0 | 13.000 | 1.322 | 2004.316 | .059% | 98.696% |
| 70.0 | 13.161 | 1.344 | 2005.659 | .060% | 98.763% |
| 71.0 | 13.161 | 1.360 | 2007.02 | .060% | 98.829% |
| 72.0 | 13.082 | 1.365 | 2008.384 | .061% | 98.897% |
| 73.0 | 13.179 | 1.373 | 2009.758 | .061% | 98.964% |
| 74.0 | 13.213 | 1.387 | 2011.145 | .062% | 99.033% |
| 75.0 | 13.045 | 1.387 | 2012.532 | .062% | 99.101% |

## Zonal flux distribution table



| γ(°) | Average I(cd) | Zonal F(lm) | Sum F(lm) | Eff Flux(%) | Eff Sum(%) |
|---|---|---|---|---|---|
| 76.0 | 13.015 | 1.383 | 2013.916 | .061% | 99.169% |
| 77.0 | 12.795 | 1.376 | 2015.292 | .061% | 99.237% |
| 78.0 | 12.694 | 1.364 | 2016.656 | .061% | 99.304% |
| 79.0 | 12.589 | 1.358 | 2018.015 | .060% | 99.371% |
| 80.0 | 12.406 | 1.348 | 2019.362 | .060% | 99.437% |
| 81.0 | 12.264 | 1.334 | 2020.696 | .059% | 99.503% |
| 82.0 | 11.995 | 1.316 | 2022.012 | .058% | 99.568% |
| 83.0 | 11.532 | 1.279 | 2023.291 | .057% | 99.631% |
| 84.0 | 10.968 | 1.226 | 2024.517 | .054% | 99.691% |
| 85.0 | 10.546 | 1.174 | 2025.691 | .052% | 99.749% |
| 86.0 | 9.852 | 1.115 | 2026.806 | .049% | 99.804% |
| 87.0 | 9.221 | 1.044 | 2027.85 | .046% | 99.855% |
| 88.0 | 8.963 | 0.996 | 2028.846 | .044% | 99.904% |
| 89.0 | 8.855 | 0.977 | 2029.822 | .043% | 99.952% |
| 90.0 | 8.799 | 0.968 | 2030.79 | .043% | 100.000% |

## Zonal flux distribution table



ZONAL LUMEN SUMMARY

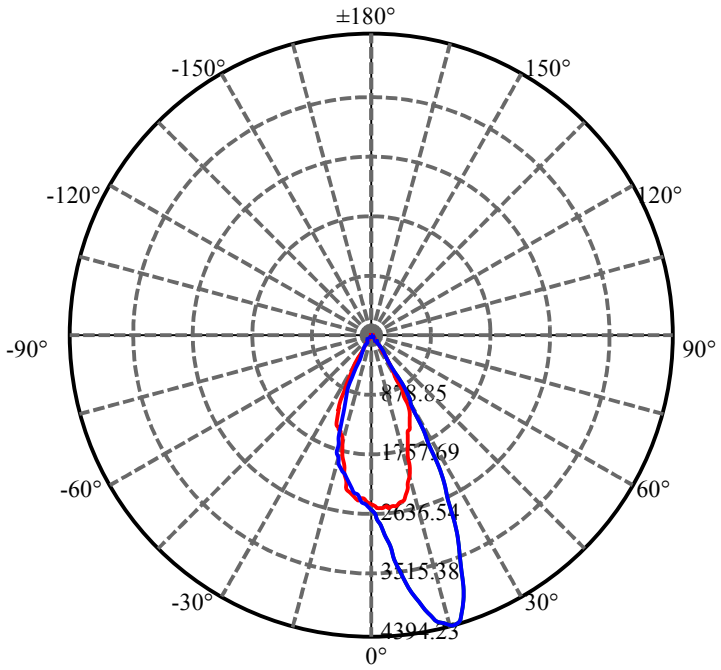
| Zone | Lumens | %Lamp | %Fixt |
|---|---|---|---|
| 0-30 | 1702.94 | 75.55% | 83.86% |
| 0-40 | 1953.83 | 86.68% | 96.21% |
| 0-60 | 1992.76 | 88.40% | 98.13% |
| 0-90 | 2029.82 | 90.05% | 99.95% |
| 0-120 | 2029.82 | 90.05% | 99.95% |
| 0-180 | 2030.79 | 90.09% | 100.00% |
| 60-90 | 38.33 | 1.70% | 1.89% |
| 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% |
| 0-28.66 | 1624.63 | 72.07% | 80.00% |

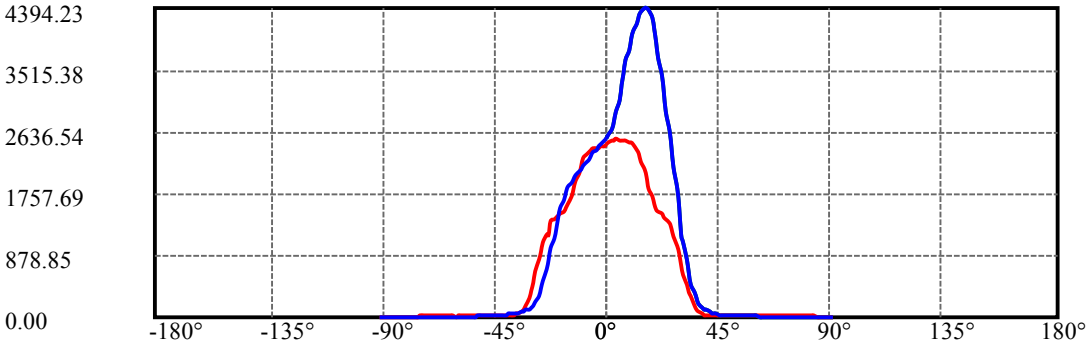
ZONAL LUMEN SUMMARY

| | |
|---|---|
| 0-10 | 250.02 |
| 10-20 | 713.66 |
| 20-30 | 739.26 |
| 30-40 | 250.89 |
| 40-50 | 25.52 |
| 50-60 | 13.40 |
| 60-70 | 12.90 |
| 70-80 | 13.70 |
| 80-90 | 10.46 |
| 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]






C90(Max):

C0/C180:

C90/C270:

Field angle(10%Imax):C0/180Left:35.3 Right:30.4

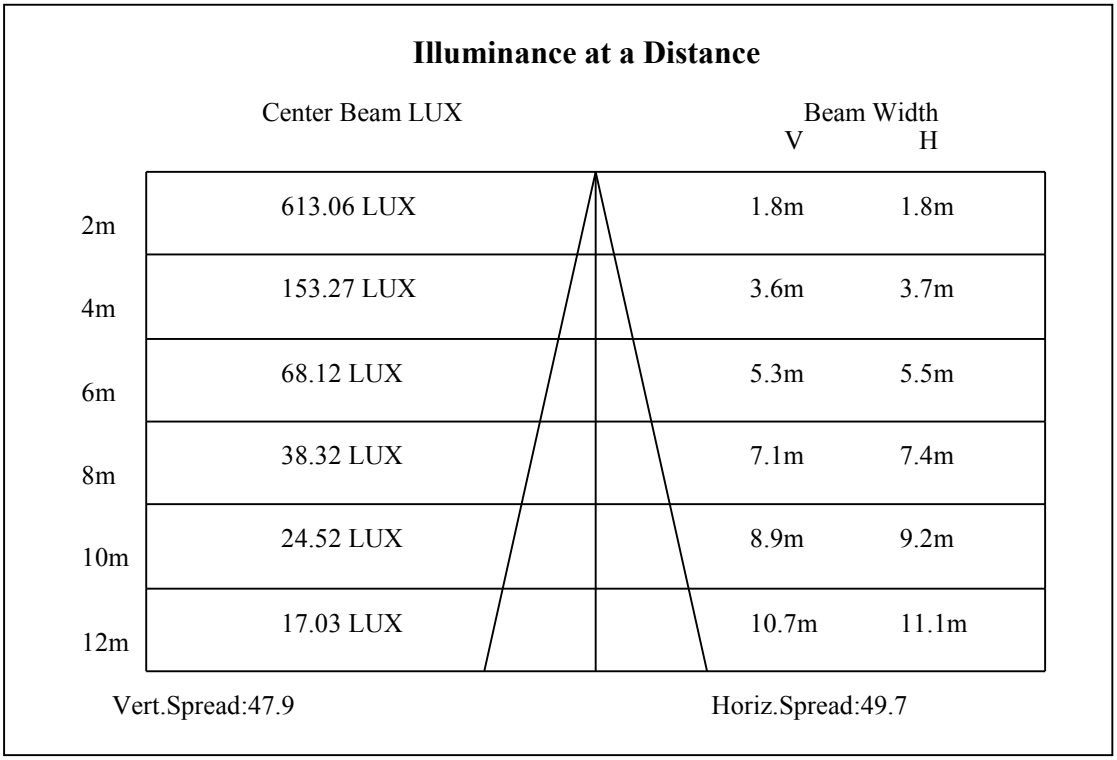
:C90/270Left:41.6 Right:18.3

Beam Angle(50%Imax):C0/180Left:26.5 Right:21.8

:C90/270Left:24.3 Right:10.8

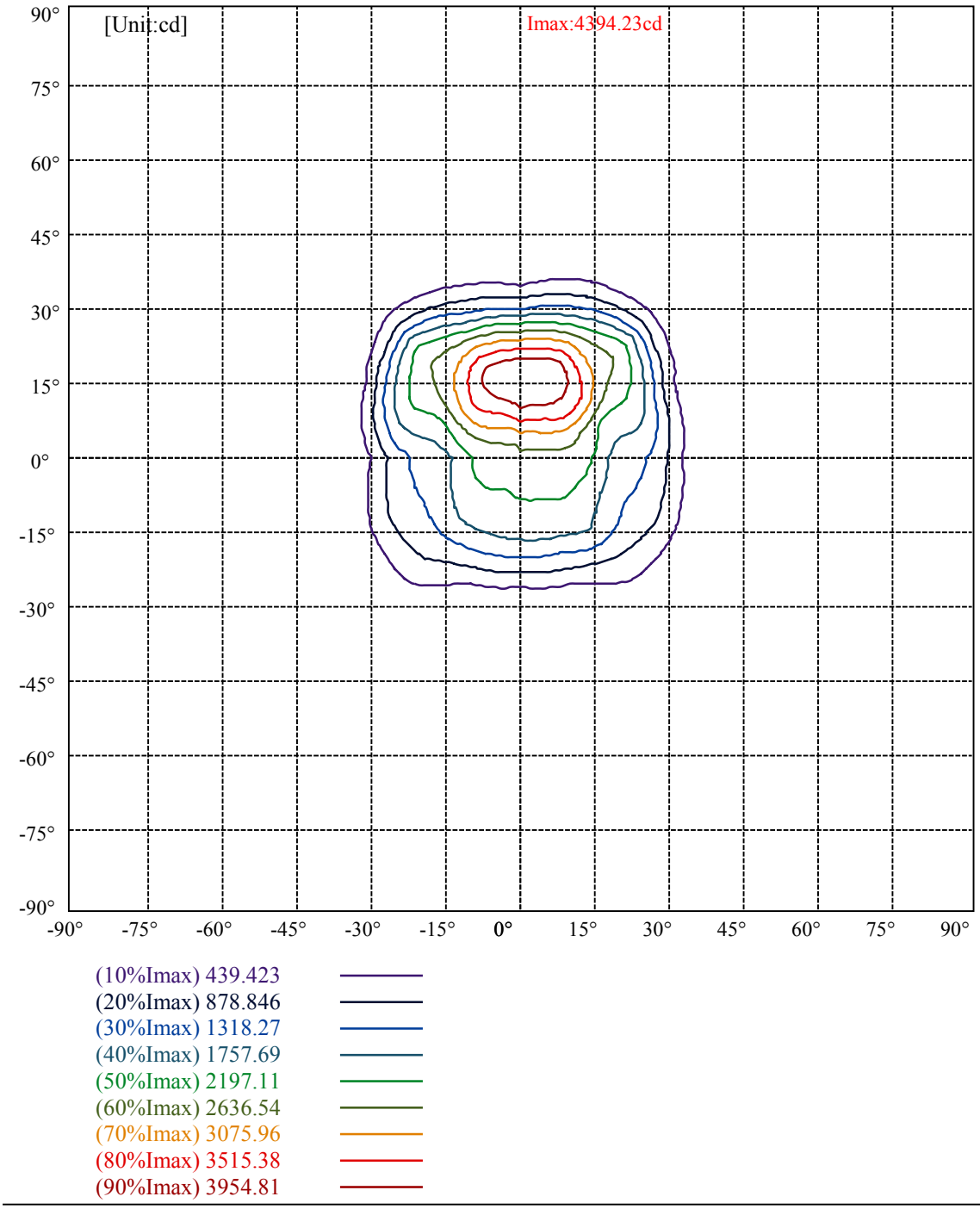
Lux distance Curve





ISO-Intensity(V-H)






(10%Imax) 439.423
(20%Imax) 878.846
(30%Imax) 1318.27
(40%Imax) 1757.69
(50%Imax) 2197.11
(60%Imax) 2636.54
(70%Imax) 3075.96
(80%Imax) 3515.38
(90%Imax) 3954.81

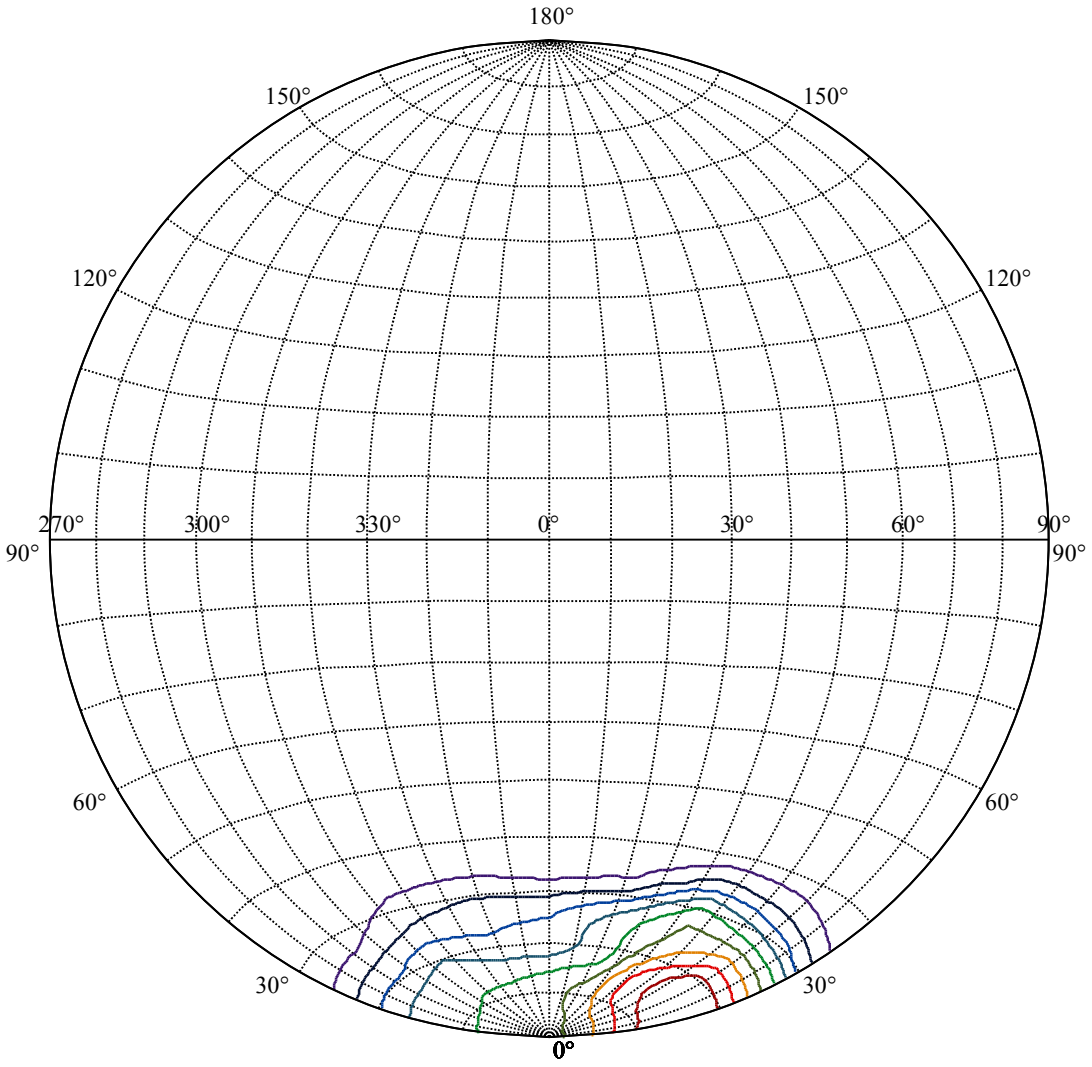
Equipment: GMS1980
Temperature(°C): 25.0

Date: 2021/8/06
Humidity(%): 65.0%

Operator: NT07
Distance(m): 7.73

ISO candela diagram on circular web






House [Unit:cd] Road

Imax:4394.23

(10%Imax) 439.423
(20%Imax) 878.846
(30%Imax) 1318.27
(40%Imax) 1757.69
(50%Imax) 2197.11
(60%Imax) 2636.54
(70%Imax) 3075.96
(80%Imax) 3515.38
(90%Imax) 3954.81

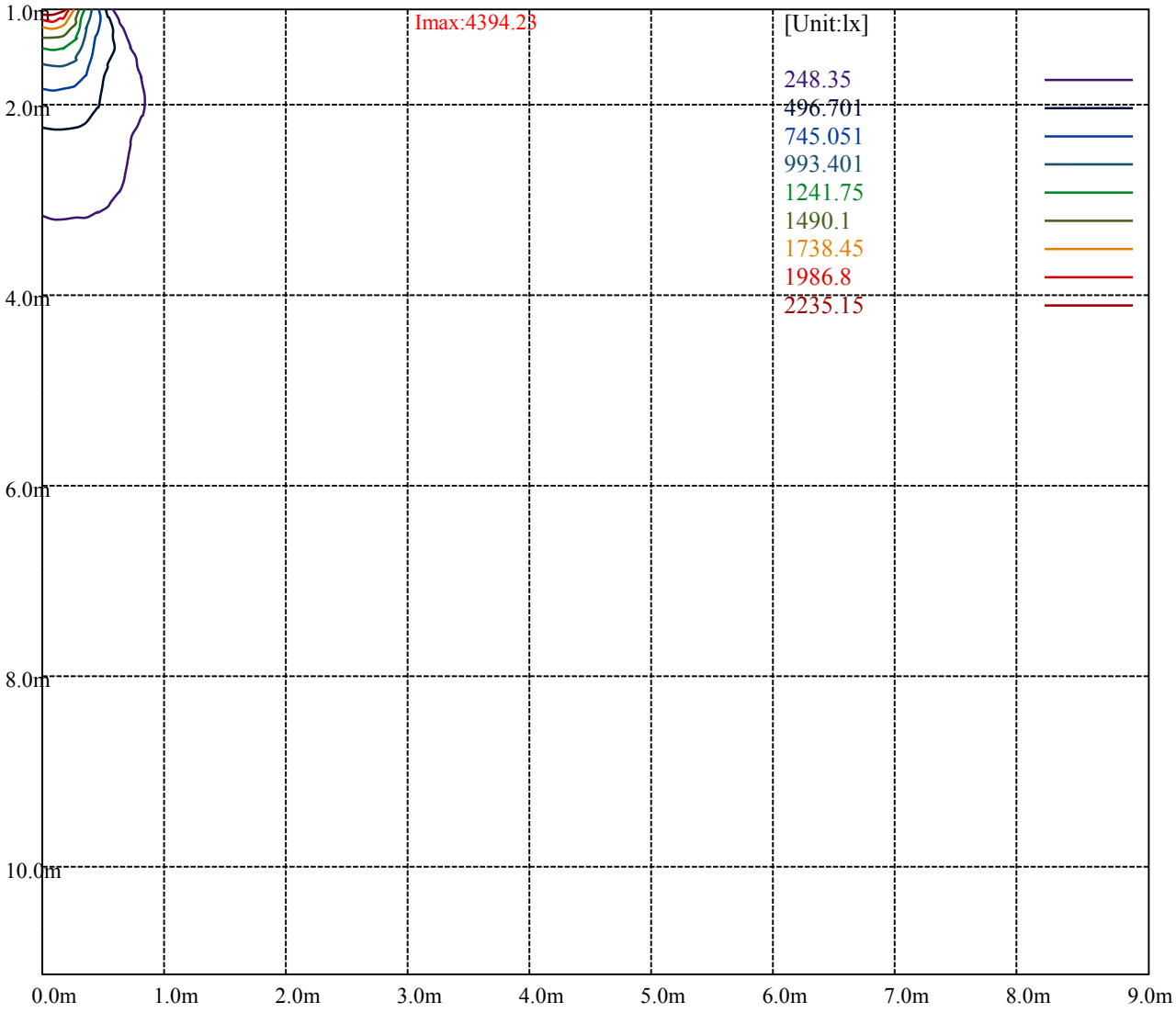
Equipment: GMS1980
Temperature(°C): 25.0

Date: 2021/8/06
Humidity(%): 65.0%

Operator: NT07
Distance(m): 7.73

## Space ISO Lux diagram






Equipment: GMS1980
Temperature(°C): 25.0

Date: 2021/8/06
Humidity(%): 65.0%

Operator: NT07
Distance(m): 7.73

Nata 2-2323-M

## Luminance Limitting Curve(no luminous side)



Luminance Table

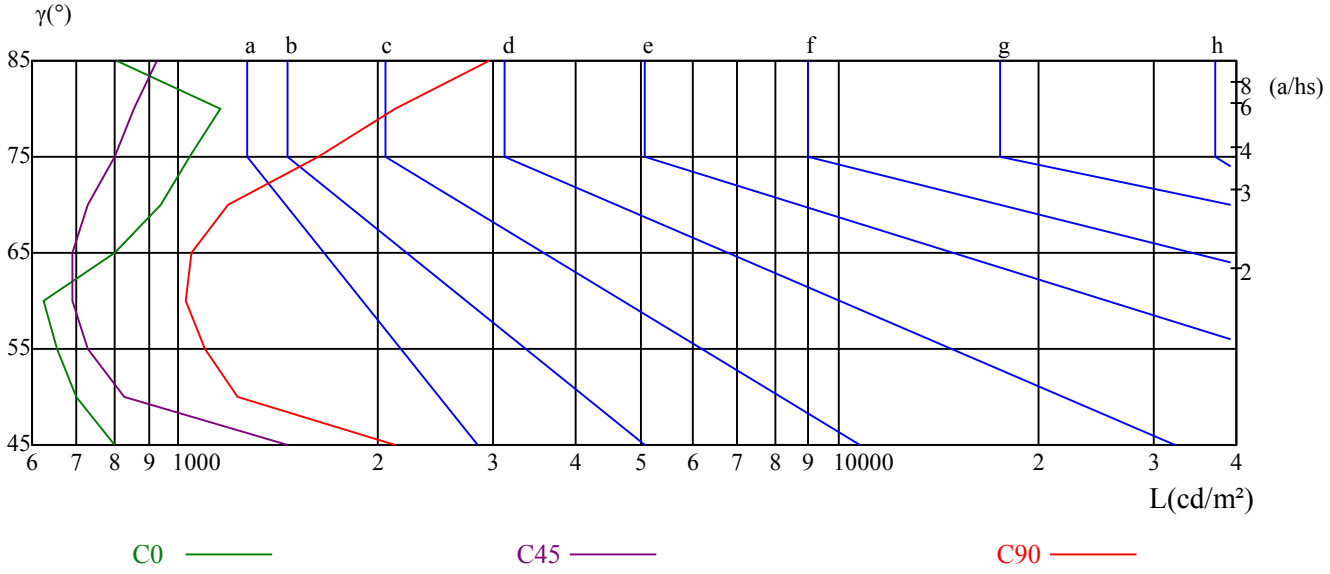
| γ | 45 | 50 | 55 | 60 | 65 | 70 | 75 | 80 | 85 |
|---|---|---|---|---|---|---|---|---|---|
| C0 | 803 | 701 | 653 | 627 | 802 | 941 | 1039 | 1158 | 804 |
| C45 | 1464 | 826 | 731 | 690 | 693 | 730 | 803 | 854 | 926 |
| C90 | 2126 | 1231 | 1095 | 1023 | 1046 | 1187 | 1624 | 2126 | 2957 |

| L(Hor)(65) | L(Ver)(65) | L45(65) | L(Hor)(75) | L(Ver)(75) | L45(75) | L(Hor)(85) | L(Ver)(85) | L45(85) |
|---|---|---|---|---|---|---|---|---|
| 1425 | 1056 | 1159 | 2336 | 1728 | 1791 | 4424 | 4557 | 4825 |

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



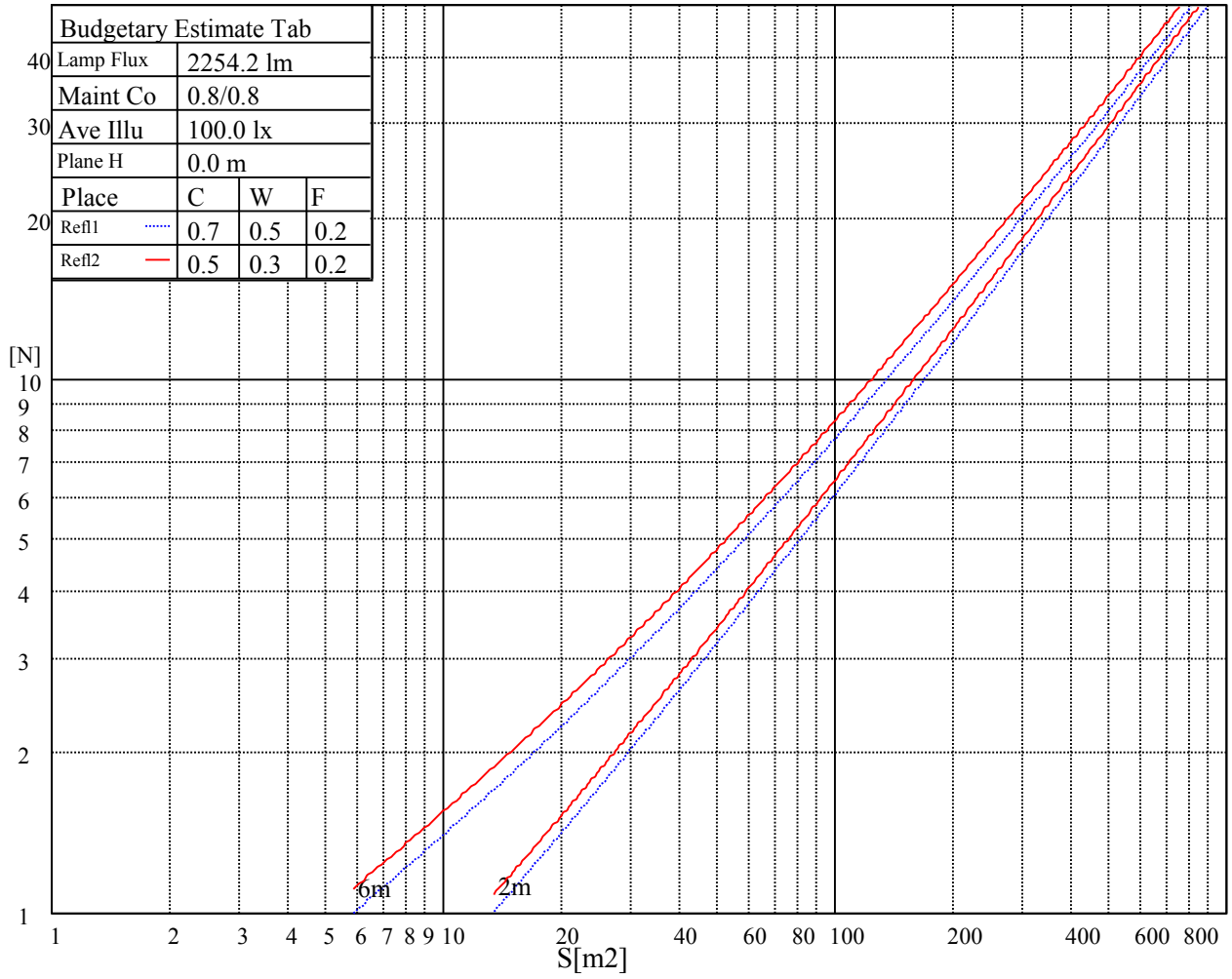

Equipment: GMS1980
Temperature(°C): 25.0

Date: 2021/8/06
Humidity(%): 65.0%

Operator: NT07
Distance(m): 7.73

## Budgetary Estimate Table






Equipment: GMS1980 Date: 2021/8/06 Operator: NT07
Temperature(°C): 25.0 Humidity(%): 65.0% Distance(m): 7.73

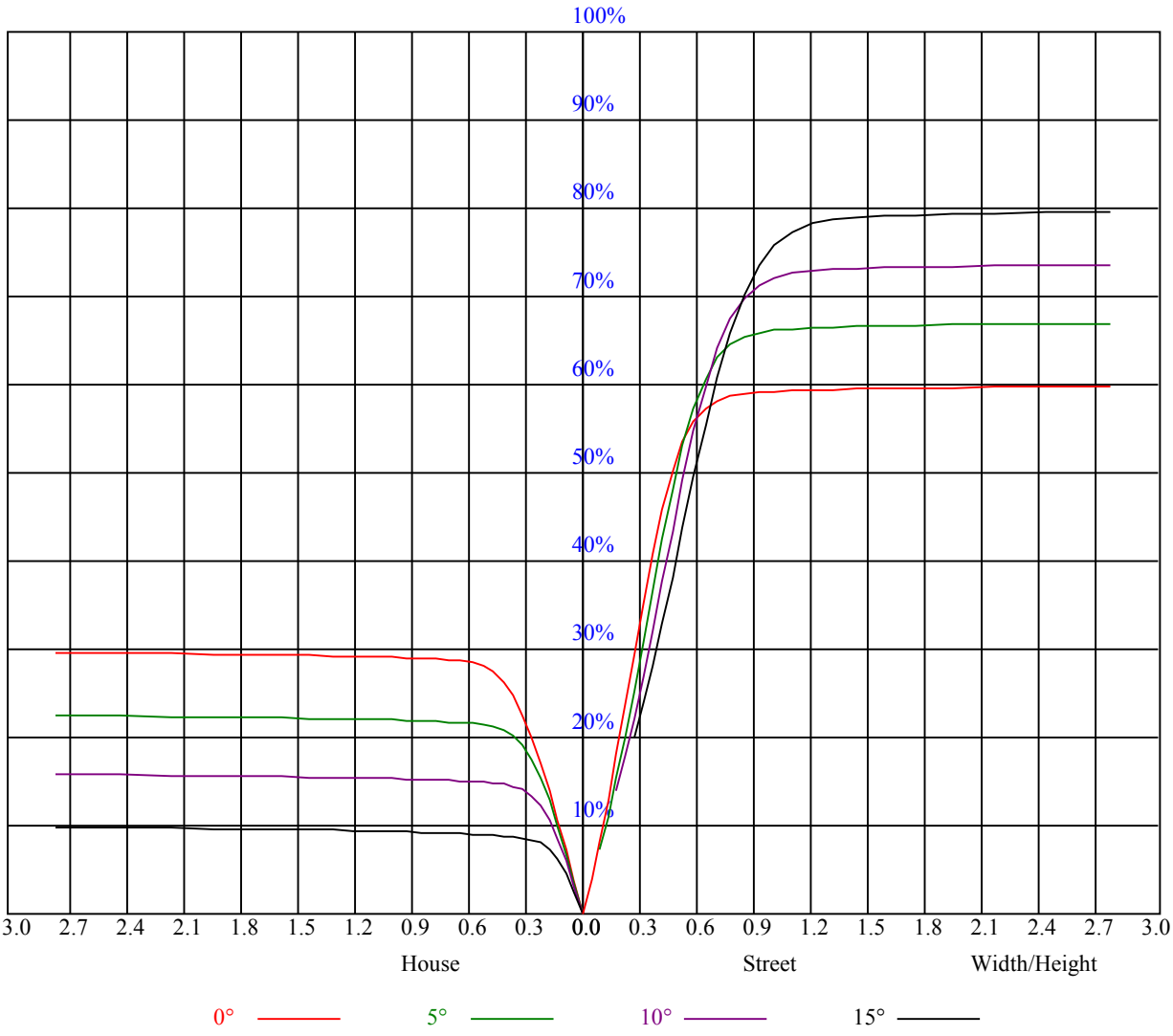
Utilization factor table for indoor luminaire



| 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 | 1.07 | 1.07 | 1.07 | 1.05 | 1.05 | 1.05 | 1.00 | 1.00 | 1.00 | 0.96 | 0.96 | 0.96 | 0.92 | 0.92 | 0.92 | 0.90 |
| 1 | 1.00 | 0.98 | 0.96 | 0.98 | 0.96 | 0.94 | 0.94 | 0.93 | 0.91 | 0.91 | 0.90 | 0.89 | 0.88 | 0.87 | 0.86 | 0.84 |
| 2 | 0.93 | 0.90 | 0.87 | 0.92 | 0.89 | 0.86 | 0.89 | 0.86 | 0.84 | 0.86 | 0.84 | 0.82 | 0.84 | 0.82 | 0.81 | 0.79 |
| 3 | 0.88 | 0.84 | 0.80 | 0.87 | 0.83 | 0.80 | 0.84 | 0.81 | 0.78 | 0.82 | 0.79 | 0.77 | 0.80 | 0.78 | 0.76 | 0.75 |
| 4 | 0.83 | 0.78 | 0.74 | 0.82 | 0.77 | 0.74 | 0.80 | 0.76 | 0.73 | 0.78 | 0.75 | 0.72 | 0.76 | 0.74 | 0.72 | 0.70 |
| 5 | 0.78 | 0.73 | 0.70 | 0.77 | 0.73 | 0.69 | 0.76 | 0.72 | 0.69 | 0.74 | 0.71 | 0.68 | 0.73 | 0.70 | 0.67 | 0.66 |
| 6 | 0.74 | 0.69 | 0.65 | 0.73 | 0.68 | 0.65 | 0.72 | 0.68 | 0.65 | 0.71 | 0.67 | 0.64 | 0.69 | 0.66 | 0.64 | 0.63 |
| 7 | 0.70 | 0.65 | 0.62 | 0.69 | 0.65 | 0.61 | 0.68 | 0.64 | 0.61 | 0.67 | 0.64 | 0.61 | 0.66 | 0.63 | 0.60 | 0.59 |
| 8 | 0.66 | 0.62 | 0.58 | 0.66 | 0.61 | 0.58 | 0.65 | 0.61 | 0.58 | 0.64 | 0.60 | 0.57 | 0.63 | 0.60 | 0.57 | 0.56 |
| 9 | 0.63 | 0.58 | 0.55 | 0.63 | 0.58 | 0.55 | 0.62 | 0.58 | 0.55 | 0.61 | 0.57 | 0.55 | 0.60 | 0.57 | 0.54 | 0.53 |
| 10 | 0.60 | 0.55 | 0.52 | 0.60 | 0.55 | 0.52 | 0.59 | 0.55 | 0.52 | 0.58 | 0.55 | 0.52 | 0.58 | 0.54 | 0.52 | 0.51 |

## Coefficient Utilization Curve






| | | |
|---|---|---|
| Equipment: GMS1980 | Date: 2021/8/06 | Operator: NT07 |
| Temperature(°C): 25.0 | Humidity(%): 65.0% | Distance(m): 7.73 |

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 | 2452.26 | 2491.10 | 2509.62 | 2513.21 | 2532.93 | 2513.21 | 2523.96 | 2522.17 | 2519.78 |
| 22.5 | 2507.23 | 2526.95 | 2559.81 | 2599.25 | 2606.42 | 2645.86 | 2673.94 | 2706.81 | 2736.68 |
| 45.0 | 2544.28 | 2582.52 | 2633.31 | 2702.03 | 2787.47 | 2849.02 | 2978.08 | 3113.13 | 3218.89 |
| 67.5 | 2519.18 | 2564.59 | 2635.70 | 2700.83 | 2786.88 | 2950.00 | 3130.45 | 3267.89 | 3451.33 |
| 90.0 | 2549.06 | 2602.24 | 2678.72 | 2788.07 | 2920.72 | 3084.44 | 3294.77 | 3475.23 | 3645.52 |
| 112.5 | 2498.27 | 2520.97 | 2561.01 | 2627.93 | 2716.37 | 2837.67 | 2998.40 | 3154.36 | 3284.02 |
| 135.0 | 2484.53 | 2494.09 | 2523.36 | 2591.48 | 2652.43 | 2719.95 | 2835.28 | 2976.29 | 3047.40 |
| 157.5 | 2478.55 | 2459.43 | 2457.04 | 2476.76 | 2489.31 | 2518.58 | 2561.01 | 2560.41 | 2582.52 |
| 180.0 | 2452.26 | 2426.57 | 2415.81 | 2392.51 | 2397.29 | 2404.46 | 2365.62 | 2346.50 | 2307.66 |
| 202.5 | 2507.23 | 2470.18 | 2414.61 | 2371.00 | 2357.85 | 2323.19 | 2332.75 | 2302.88 | 2260.45 |
| 225.0 | 2544.28 | 2502.45 | 2448.08 | 2382.95 | 2337.53 | 2319.61 | 2268.82 | 2226.99 | 2215.04 |
| 247.5 | 2519.18 | 2473.77 | 2418.80 | 2365.02 | 2318.41 | 2269.42 | 2223.41 | 2187.55 | 2152.30 |
| 270.0 | 2549.06 | 2503.65 | 2464.21 | 2427.16 | 2381.15 | 2338.73 | 2300.49 | 2248.50 | 2208.47 |
| 292.5 | 2498.27 | 2475.56 | 2453.45 | 2417.00 | 2383.54 | 2344.11 | 2304.67 | 2268.82 | 2231.77 |
| 315.0 | 2484.53 | 2485.72 | 2477.36 | 2450.47 | 2418.80 | 2402.66 | 2372.79 | 2325.58 | 2316.02 |
| 337.5 | 2478.55 | 2495.88 | 2485.12 | 2474.97 | 2474.97 | 2443.30 | 2436.72 | 2401.47 | 2393.70 |
| 360.0 | 2452.26 | 2491.10 | 2509.62 | 2513.21 | 2532.93 | 2513.21 | 2523.96 | 2522.17 | 2519.78 |

| C/γ(°) | 9.0 | 10.0 | 11.0 | 12.0 | 13.0 | 14.0 | 15.0 | 16.0 | 17.0 |
|---|---|---|---|---|---|---|---|---|---|
| 0.0 | 2491.10 | 2481.54 | 2444.49 | 2375.78 | 2310.05 | 2223.41 | 2109.28 | 1993.36 | 1833.22 |
| 22.5 | 2750.43 | 2768.35 | 2745.65 | 2715.77 | 2638.69 | 2556.23 | 2432.54 | 2278.98 | 2154.69 |
| 45.0 | 3327.04 | 3468.66 | 3542.75 | 3635.96 | 3659.27 | 3684.96 | 3680.78 | 3638.95 | 3566.65 |
| 67.5 | 3644.33 | 3735.15 | 3925.17 | 4030.93 | 4161.79 | 4253.81 | 4305.79 | 4354.19 | 4358.38 |
| 90.0 | 3797.89 | 3959.82 | 4064.99 | 4174.34 | 4278.31 | 4339.26 | 4385.27 | 4394.23 | 4364.35 |
| 112.5 | 3457.30 | 3597.12 | 3718.42 | 3833.15 | 3942.50 | 4017.78 | 4111.60 | 4141.47 | 4127.13 |
| 135.0 | 3154.95 | 3265.50 | 3343.77 | 3404.12 | 3427.43 | 3442.96 | 3385.60 | 3319.27 | 3221.88 |
| 157.5 | 2583.72 | 2592.08 | 2559.22 | 2501.26 | 2402.07 | 2324.39 | 2245.51 | 2155.29 | 2081.79 |
| 180.0 | 2264.04 | 2168.43 | 2048.93 | 1943.16 | 1820.67 | 1708.34 | 1604.37 | 1550.59 | 1490.83 |
| 202.5 | 2236.55 | 2191.74 | 2152.90 | 2069.24 | 1965.87 | 1858.32 | 1741.80 | 1643.80 | 1536.84 |
| 225.0 | 2191.14 | 2146.32 | 2118.24 | 2082.39 | 2039.37 | 1998.14 | 1939.58 | 1867.88 | 1770.48 |
| 247.5 | 2106.29 | 2063.27 | 2021.44 | 1992.76 | 1966.47 | 1919.86 | 1845.77 | 1771.67 | 1673.68 |
| 270.0 | 2164.25 | 2112.86 | 2066.26 | 2023.23 | 1970.65 | 1921.65 | 1864.29 | 1784.82 | 1674.87 |
| 292.5 | 2197.71 | 2157.68 | 2106.89 | 2068.05 | 2029.81 | 1990.37 | 1935.40 | 1860.71 | 1770.48 |
| 315.0 | 2274.20 | 2235.36 | 2218.63 | 2182.18 | 2135.57 | 2102.11 | 2071.63 | 2030.40 | 1957.51 |
| 337.5 | 2353.07 | 2314.23 | 2284.95 | 2238.94 | 2170.23 | 2090.75 | 2023.23 | 1904.92 | 1800.95 |
| 360.0 | 2491.10 | 2481.54 | 2444.49 | 2375.78 | 2310.05 | 2223.41 | 2109.28 | 1993.36 | 1833.22 |

| C/γ(°) | 18.0 | 19.0 | 20.0 | 21.0 | 22.0 | 23.0 | 24.0 | 25.0 | 26.0 |
|---|---|---|---|---|---|---|---|---|---|
| 0.0 | 1705.95 | 1605.56 | 1539.83 | 1489.64 | 1464.54 | 1432.28 | 1389.85 | 1326.51 | 1254.21 |
| 22.5 | 2045.94 | 1983.20 | 1983.80 | 1992.16 | 2008.89 | 2022.64 | 2007.10 | 1958.10 | 1875.05 |
| 45.0 | 3452.52 | 3312.10 | 3146.59 | 3028.28 | 2936.26 | 2816.15 | 2764.77 | 2722.34 | 2679.32 |
| 67.5 | 4338.06 | 4247.83 | 4092.48 | 3895.29 | 3704.68 | 3465.67 | 3248.17 | 3040.83 | 2760.58 |
| 90.0 | 4259.78 | 4086.50 | 3898.88 | 3674.21 | 3427.43 | 3192.00 | 2930.88 | 2654.22 | 2407.44 |
| 112.5 | 4064.39 | 3962.81 | 3831.36 | 3621.03 | 3422.65 | 3229.05 | 2988.84 | 2766.56 | 2537.11 |
| 135.0 | 3120.89 | 3044.41 | 2966.73 | 2868.74 | 2805.40 | 2765.96 | 2706.81 | 2666.77 | 2616.58 |
| 157.5 | 2066.26 | 2062.07 | 2085.38 | 2108.08 | 2125.41 | 2146.32 | 2143.93 | 2071.04 | 1956.31 |
| 180.0 | 1469.92 | 1453.79 | 1431.68 | 1404.79 | 1353.40 | 1185.50 | 1161.72 | 1064.50 | 916.13 |
| 202.5 | 1435.86 | 1386.27 | 1350.42 | 1318.15 | 1284.09 | 1258.99 | 1189.56 | 1168.71 | 1102.62 |
| 225.0 | 1673.68 | 1582.26 | 1484.26 | 1373.12 | 1276.92 | 1194.46 | 1111.40 | 1043.29 | 973.97 |
| 247.5 | 1579.87 | 1470.52 | 1362.37 | 1188.37 | 1094.14 | 962.68 | 798.24 | 662.36 | 532.88 |
| 270.0 | 1557.76 | 1415.55 | 1266.16 | 1128.73 | 972.18 | 828.77 | 669.83 | 516.27 | 396.76 |
| 292.5 | 1651.57 | 1545.81 | 1409.57 | 1179.46 | 1131.90 | 980.66 | 846.04 | 689.19 | 541.90 |
| 315.0 | 1897.75 | 1826.65 | 1731.04 | 1627.67 | 1509.36 | 1364.16 | 1224.34 | 1092.28 | 972.78 |
| 337.5 | 1673.08 | 1538.64 | 1450.20 | 1379.69 | 1334.88 | 1293.05 | 1257.20 | 1187.29 | 1161.72 |
| 360.0 | 1705.95 | 1605.56 | 1539.83 | 1489.64 | 1464.54 | 1432.28 | 1389.85 | 1326.51 | 1254.21 |

Intensity data(cd)



| C/γ(°) | 27.0 | 28.0 | 29.0 | 30.0 | 31.0 | 32.0 | 33.0 | 34.0 | 35.0 |
|---|---|---|---|---|---|---|---|---|---|
| 0.0 | 1143.67 | 1016.40 | 898.68 | 749.90 | 602.91 | 472.65 | 343.58 | 307.13 | 172.75 |
| 22.5 | 1738.81 | 1532.66 | 1337.87 | 1131.72 | 877.17 | 685.37 | 521.64 | 364.49 | 305.93 |
| 45.0 | 2638.09 | 2553.84 | 2428.96 | 2286.15 | 2079.40 | 1837.40 | 1582.26 | 1182.39 | 1041.49 |
| 67.5 | 2532.93 | 2261.65 | 2009.49 | 1780.04 | 1535.65 | 1306.20 | 1113.79 | 934.54 | 743.33 |
| 90.0 | 2137.36 | 1818.28 | 1564.93 | 1183.82 | 1071.19 | 828.83 | 641.39 | 470.97 | 354.04 |
| 112.5 | 2239.54 | 1973.64 | 1725.66 | 1482.47 | 1265.57 | 1083.92 | 901.67 | 726.60 | 598.72 |
| 135.0 | 2552.64 | 2442.70 | 2333.95 | 2169.03 | 1981.41 | 1737.02 | 1474.10 | 1163.75 | 961.42 |
| 157.5 | 1808.12 | 1626.47 | 1436.46 | 1245.85 | 952.46 | 751.09 | 589.16 | 359.11 | 302.35 |
| 180.0 | 810.19 | 665.05 | 503.36 | 391.98 | 283.77 | 166.47 | 113.35 | 73.68 | 46.31 |
| 202.5 | 1025.48 | 921.75 | 822.68 | 728.33 | 607.63 | 489.14 | 389.47 | 278.33 | 185.47 |
| 225.0 | 900.48 | 820.41 | 754.08 | 675.81 | 590.36 | 515.67 | 429.62 | 358.52 | 305.34 |
| 247.5 | 405.66 | 302.05 | 233.22 | 172.63 | 128.29 | 85.69 | 61.78 | 52.28 | 46.49 |
| 270.0 | 311.91 | 212.60 | 172.27 | 137.97 | 106.54 | 96.02 | 88.61 | 79.29 | 64.53 |
| 292.5 | 422.81 | 320.28 | 232.38 | 183.32 | 140.24 | 97.22 | 81.02 | 74.87 | 66.92 |
| 315.0 | 879.56 | 785.75 | 696.72 | 621.43 | 542.56 | 467.27 | 399.15 | 338.80 | 306.53 |
| 337.5 | 1105.01 | 1024.34 | 930.29 | 836.78 | 732.99 | 623.28 | 518.83 | 383.20 | 296.91 |
| 360.0 | 1143.67 | 1016.40 | 898.68 | 749.90 | 602.91 | 472.65 | 343.58 | 307.13 | 172.75 |

| C/γ(°) | 36.0 | 37.0 | 38.0 | 39.0 | 40.0 | 41.0 | 42.0 | 43.0 | 44.0 |
|---|---|---|---|---|---|---|---|---|---|
| 0.0 | 108.45 | 70.99 | 46.97 | 37.35 | 33.52 | 30.06 | 25.99 | 22.71 | 21.81 |
| 22.5 | 151.29 | 96.26 | 63.52 | 49.00 | 42.25 | 36.51 | 32.39 | 28.56 | 26.47 |
| 45.0 | 832.00 | 638.28 | 462.31 | 330.25 | 246.42 | 177.88 | 129.31 | 81.92 | 51.03 |
| 67.5 | 606.49 | 484.60 | 368.08 | 309.52 | 193.24 | 133.61 | 101.64 | 91.00 | 70.45 |
| 90.0 | 267.16 | 191.63 | 144.36 | 114.31 | 101.94 | 78.69 | 66.92 | 55.87 | 49.95 |
| 112.5 | 463.08 | 371.07 | 308.92 | 189.60 | 141.38 | 117.35 | 100.03 | 78.93 | 66.09 |
| 135.0 | 740.70 | 585.52 | 451.31 | 307.37 | 221.15 | 155.36 | 95.49 | 63.76 | 44.10 |
| 157.5 | 136.48 | 85.27 | 60.71 | 51.57 | 40.81 | 35.97 | 31.31 | 27.96 | 26.47 |
| 180.0 | 41.35 | 36.45 | 30.35 | 26.05 | 23.78 | 22.35 | 21.63 | 20.61 | 19.90 |
| 202.5 | 121.30 | 73.68 | 49.12 | 39.08 | 32.63 | 29.58 | 24.86 | 21.33 | 20.55 |
| 225.0 | 205.01 | 149.38 | 102.18 | 62.02 | 40.33 | 29.70 | 24.26 | 21.57 | 19.48 |
| 247.5 | 39.80 | 32.03 | 24.02 | 20.02 | 18.11 | 16.85 | 15.95 | 15.24 | 14.70 |
| 270.0 | 54.85 | 51.69 | 48.52 | 44.87 | 35.97 | 29.16 | 23.72 | 19.60 | 18.22 |
| 292.5 | 53.66 | 42.54 | 33.40 | 27.43 | 23.54 | 19.36 | 17.39 | 15.95 | 14.88 |
| 315.0 | 192.34 | 137.67 | 85.92 | 50.31 | 35.43 | 28.14 | 23.90 | 20.97 | 18.16 |
| 337.5 | 207.88 | 132.11 | 90.82 | 52.58 | 34.12 | 30.89 | 27.37 | 23.54 | 21.09 |
| 360.0 | 108.45 | 70.99 | 46.97 | 37.35 | 33.52 | 30.06 | 25.99 | 22.71 | 21.81 |

| C/γ(°) | 45.0 | 46.0 | 47.0 | 48.0 | 49.0 | 50.0 | 51.0 | 52.0 | 53.0 |
|---|---|---|---|---|---|---|---|---|---|
| 0.0 | 21.03 | 20.26 | 19.54 | 18.70 | 18.34 | 17.69 | 17.15 | 16.85 | 16.31 |
| 22.5 | 25.45 | 24.14 | 23.60 | 22.71 | 22.17 | 21.33 | 20.50 | 19.84 | 19.30 |
| 45.0 | 35.55 | 28.80 | 25.87 | 23.54 | 21.27 | 19.12 | 18.52 | 17.87 | 17.15 |
| 67.5 | 60.17 | 51.33 | 42.07 | 33.82 | 25.22 | 22.05 | 20.73 | 18.76 | 17.33 |
| 90.0 | 39.91 | 30.06 | 26.71 | 24.92 | 22.77 | 21.15 | 19.90 | 19.00 | 18.28 |
| 112.5 | 54.49 | 46.91 | 31.73 | 27.25 | 23.72 | 21.93 | 20.02 | 18.58 | 17.33 |
| 135.0 | 32.63 | 27.96 | 24.26 | 20.91 | 19.18 | 18.22 | 17.33 | 16.73 | 16.13 |
| 157.5 | 25.04 | 23.60 | 22.53 | 21.39 | 20.32 | 19.30 | 18.52 | 17.93 | 17.33 |
| 180.0 | 19.36 | 18.58 | 18.05 | 17.45 | 16.85 | 16.37 | 16.01 | 15.60 | 15.30 |
| 202.5 | 19.54 | 18.82 | 18.34 | 17.99 | 17.51 | 17.21 | 16.85 | 16.49 | 16.25 |
| 225.0 | 17.93 | 17.15 | 16.67 | 16.13 | 15.83 | 15.42 | 14.94 | 14.76 | 14.58 |
| 247.5 | 14.28 | 13.86 | 13.56 | 13.21 | 12.97 | 12.73 | 12.49 | 12.31 | 12.19 |
| 270.0 | 17.27 | 16.61 | 16.07 | 15.66 | 15.00 | 14.46 | 13.98 | 13.44 | 12.97 |
| 292.5 | 14.16 | 13.62 | 13.09 | 12.79 | 12.49 | 12.19 | 12.01 | 11.83 | 11.65 |
| 315.0 | 17.15 | 16.07 | 15.42 | 15.00 | 14.76 | 14.94 | 14.16 | 13.80 | 13.38 |
| 337.5 | 18.58 | 17.87 | 17.39 | 16.85 | 16.37 | 15.89 | 15.54 | 15.18 | 14.88 |
| 360.0 | 21.03 | 20.26 | 19.54 | 18.70 | 18.34 | 17.69 | 17.15 | 16.85 | 16.31 |

Intensity data(cd)



| C/γ(°) | 54.0 | 55.0 | 56.0 | 57.0 | 58.0 | 59.0 | 60.0 | 61.0 | 62.0 |
|---|---|---|---|---|---|---|---|---|---|
| 0.0 | 16.07 | 15.72 | 15.36 | 14.94 | 14.76 | 14.64 | 14.22 | 14.28 | 14.16 |
| 22.5 | 18.76 | 18.28 | 17.81 | 17.09 | 16.67 | 16.25 | 15.89 | 15.54 | 15.36 |
| 45.0 | 16.49 | 15.95 | 15.54 | 15.06 | 14.70 | 14.28 | 14.04 | 13.80 | 13.56 |
| 67.5 | 16.31 | 15.60 | 15.00 | 14.40 | 13.98 | 13.56 | 13.27 | 13.03 | 12.79 |
| 90.0 | 17.75 | 16.91 | 16.43 | 16.07 | 14.94 | 14.46 | 13.92 | 13.21 | 12.91 |
| 112.5 | 16.37 | 15.66 | 15.00 | 14.46 | 14.04 | 13.56 | 13.03 | 12.73 | 12.43 |
| 135.0 | 15.48 | 15.18 | 14.82 | 14.28 | 13.92 | 13.68 | 13.44 | 13.21 | 12.97 |
| 157.5 | 16.85 | 16.31 | 15.77 | 15.42 | 15.06 | 14.82 | 14.46 | 14.28 | 14.04 |
| 180.0 | 14.94 | 14.70 | 14.52 | 14.22 | 13.98 | 13.74 | 13.56 | 13.74 | 13.92 |
| 202.5 | 15.89 | 15.60 | 15.42 | 15.12 | 14.88 | 14.76 | 14.58 | 14.46 | 14.34 |
| 225.0 | 14.04 | 13.68 | 13.50 | 13.27 | 13.09 | 12.97 | 12.97 | 12.79 | 12.73 |
| 247.5 | 12.01 | 11.89 | 11.77 | 11.59 | 11.53 | 11.41 | 11.29 | 11.23 | 11.17 |
| 270.0 | 12.67 | 12.43 | 12.19 | 12.01 | 11.83 | 11.65 | 11.53 | 11.29 | 11.11 |
| 292.5 | 11.47 | 11.35 | 11.23 | 11.17 | 11.05 | 10.93 | 10.88 | 10.82 | 10.70 |
| 315.0 | 13.27 | 12.73 | 12.55 | 12.43 | 12.37 | 12.13 | 12.13 | 12.13 | 11.95 |
| 337.5 | 14.70 | 14.34 | 14.10 | 13.86 | 13.56 | 13.38 | 13.21 | 13.09 | 12.91 |
| 360.0 | 16.07 | 15.72 | 15.36 | 14.94 | 14.76 | 14.64 | 14.22 | 14.28 | 14.16 |

| C/γ(°) | 63.0 | 64.0 | 65.0 | 66.0 | 67.0 | 68.0 | 69.0 | 70.0 | 71.0 |
|---|---|---|---|---|---|---|---|---|---|
| 0.0 | 14.82 | 15.95 | 16.97 | 17.27 | 17.27 | 17.33 | 17.87 | 18.34 | 18.22 |
| 22.5 | 15.72 | 16.19 | 16.61 | 16.91 | 16.79 | 16.91 | 17.57 | 18.22 | 18.05 |
| 45.0 | 13.32 | 13.21 | 12.97 | 12.79 | 12.61 | 12.49 | 12.37 | 12.37 | 12.31 |
| 67.5 | 12.61 | 12.37 | 12.25 | 12.13 | 12.01 | 11.83 | 11.71 | 11.59 | 11.53 |
| 90.0 | 12.67 | 12.37 | 12.19 | 11.95 | 11.71 | 11.59 | 11.53 | 11.41 | 11.41 |
| 112.5 | 12.19 | 11.95 | 11.71 | 11.53 | 11.35 | 11.11 | 10.99 | 10.88 | 10.82 |
| 135.0 | 12.79 | 12.61 | 12.49 | 12.31 | 12.19 | 12.01 | 11.77 | 11.65 | 11.41 |
| 157.5 | 13.80 | 13.68 | 13.56 | 13.44 | 13.38 | 13.38 | 13.56 | 13.80 | 13.74 |
| 180.0 | 13.98 | 14.10 | 13.92 | 14.04 | 14.04 | 14.46 | 14.52 | 14.70 | 14.70 |
| 202.5 | 14.34 | 14.40 | 14.52 | 14.70 | 14.82 | 14.76 | 14.82 | 15.06 | 15.36 |
| 225.0 | 12.55 | 12.73 | 12.61 | 12.55 | 12.55 | 12.37 | 12.43 | 12.49 | 12.43 |
| 247.5 | 11.05 | 10.93 | 10.88 | 10.88 | 10.82 | 10.82 | 10.88 | 10.88 | 10.88 |
| 270.0 | 10.99 | 10.82 | 10.70 | 10.70 | 10.70 | 10.64 | 10.64 | 10.64 | 10.64 |
| 292.5 | 10.64 | 10.58 | 10.46 | 10.40 | 10.40 | 10.28 | 10.28 | 10.22 | 10.22 |
| 315.0 | 12.01 | 12.19 | 12.19 | 12.13 | 11.77 | 11.53 | 11.77 | 12.13 | 12.01 |
| 337.5 | 12.85 | 13.32 | 13.92 | 14.58 | 14.94 | 15.00 | 15.30 | 16.19 | 16.85 |
| 360.0 | 14.82 | 15.95 | 16.97 | 17.27 | 17.27 | 17.33 | 17.87 | 18.34 | 18.22 |

| C/γ(°) | 72.0 | 73.0 | 74.0 | 75.0 | 76.0 | 77.0 | 78.0 | 79.0 | 80.0 |
|---|---|---|---|---|---|---|---|---|---|
| 0.0 | 18.28 | 18.82 | 18.64 | 18.34 | 18.58 | 18.46 | 18.28 | 18.11 | 18.16 |
| 22.5 | 17.87 | 18.46 | 17.93 | 17.81 | 17.93 | 16.97 | 16.79 | 16.49 | 15.42 |
| 45.0 | 12.25 | 12.25 | 12.37 | 12.07 | 12.19 | 11.77 | 11.65 | 11.41 | 11.11 |
| 67.5 | 11.41 | 11.35 | 11.29 | 11.29 | 11.23 | 11.05 | 10.88 | 10.70 | 10.58 |
| 90.0 | 11.65 | 12.01 | 12.13 | 12.19 | 12.07 | 11.89 | 11.65 | 11.83 | 11.35 |
| 112.5 | 10.70 | 10.58 | 10.52 | 10.52 | 10.46 | 10.34 | 10.22 | 10.10 | 10.04 |
| 135.0 | 11.23 | 11.11 | 10.99 | 10.88 | 10.76 | 10.64 | 10.46 | 10.22 | 10.16 |
| 157.5 | 13.62 | 13.56 | 13.56 | 13.32 | 12.79 | 11.35 | 11.11 | 10.99 | 10.88 |
| 180.0 | 14.58 | 14.64 | 14.52 | 12.67 | 11.65 | 11.11 | 10.88 | 10.64 | 10.28 |
| 202.5 | 15.30 | 15.48 | 16.01 | 15.95 | 16.31 | 16.19 | 15.72 | 15.24 | 15.30 |
| 225.0 | 12.25 | 12.25 | 12.43 | 12.67 | 12.79 | 12.91 | 13.15 | 13.03 | 13.03 |
| 247.5 | 10.93 | 10.99 | 11.23 | 11.11 | 11.17 | 11.23 | 11.35 | 11.47 | 11.59 |
| 270.0 | 10.64 | 10.70 | 10.70 | 10.76 | 10.88 | 10.99 | 11.05 | 11.29 | 11.35 |
| 292.5 | 10.22 | 10.16 | 10.04 | 10.04 | 10.10 | 10.10 | 10.16 | 10.22 | 10.28 |
| 315.0 | 11.65 | 11.29 | 11.47 | 11.95 | 12.01 | 12.37 | 12.43 | 12.43 | 12.13 |
| 337.5 | 16.73 | 17.21 | 17.57 | 17.15 | 17.33 | 17.33 | 17.33 | 17.27 | 16.85 |
| 360.0 | 18.28 | 18.82 | 18.64 | 18.34 | 18.58 | 18.46 | 18.28 | 18.11 | 18.16 |

Intensity data(cd)



| C/γ(°) | 81.0 | 82.0 | 83.0 | 84.0 | 85.0 | 86.0 | 87.0 | 88.0 | 89.0 |
|---|---|---|---|---|---|---|---|---|---|
| 0.0 | 17.75 | 17.21 | 15.95 | 12.97 | 10.93 | 10.82 | 10.52 | 8.84 | 8.72 |
| 22.5 | 14.58 | 13.32 | 12.01 | 11.77 | 11.65 | 10.10 | 9.98 | 9.80 | 9.62 |
| 45.0 | 10.93 | 10.88 | 10.76 | 10.76 | 10.10 | 9.68 | 9.56 | 9.44 | 9.38 |
| 67.5 | 10.52 | 10.40 | 10.34 | 10.28 | 9.68 | 9.38 | 9.32 | 9.20 | 9.08 |
| 90.0 | 11.29 | 11.47 | 11.35 | 10.46 | 9.26 | 9.02 | 8.90 | 8.78 | 8.72 |
| 112.5 | 9.98 | 9.92 | 9.80 | 9.74 | 9.08 | 8.96 | 8.78 | 8.72 | 8.66 |
| 135.0 | 9.98 | 9.92 | 9.92 | 9.26 | 8.96 | 8.84 | 8.72 | 8.60 | 8.54 |
| 157.5 | 10.52 | 10.10 | 9.92 | 9.74 | 9.08 | 8.84 | 8.60 | 8.43 | 8.37 |
| 180.0 | 10.10 | 10.16 | 9.98 | 9.02 | 8.84 | 8.60 | 8.37 | 8.31 | 8.31 |
| 202.5 | 15.36 | 14.58 | 12.37 | 12.19 | 12.19 | 9.98 | 9.80 | 9.68 | 9.50 |
| 225.0 | 13.09 | 12.97 | 12.73 | 12.73 | 12.73 | 9.98 | 9.56 | 9.50 | 9.32 |
| 247.5 | 11.71 | 11.89 | 12.01 | 12.07 | 12.07 | 9.26 | 9.14 | 9.02 | 8.90 |
| 270.0 | 11.47 | 11.41 | 11.59 | 11.35 | 11.11 | 11.05 | 9.02 | 8.84 | 8.66 |
| 292.5 | 10.34 | 10.40 | 10.40 | 10.40 | 10.46 | 10.52 | 8.84 | 8.72 | 8.60 |
| 315.0 | 12.19 | 11.77 | 11.53 | 11.29 | 11.35 | 11.41 | 9.56 | 8.78 | 8.72 |
| 337.5 | 16.43 | 15.54 | 13.86 | 11.47 | 11.23 | 11.17 | 8.84 | 8.72 | 8.54 |
| 360.0 | 17.75 | 17.21 | 15.95 | 12.97 | 10.93 | 10.82 | 10.52 | 8.84 | 8.72 |

| C/γ(°) | 90.0 |
|---|---|
| 0.0 | 8.54 |
| 22.5 | 9.50 |
| 45.0 | 9.32 |
| 67.5 | 9.02 |
| 90.0 | 8.66 |
| 112.5 | 8.54 |
| 135.0 | 8.54 |
| 157.5 | 8.43 |
| 180.0 | 8.25 |
| 202.5 | 9.44 |
| 225.0 | 9.32 |
| 247.5 | 8.90 |
| 270.0 | 8.66 |
| 292.5 | 8.54 |
| 315.0 | 8.60 |
| 337.5 | 8.48 |
| 360.0 | 8.54 |