NATA LIGHTING CO.,LTD.
www.nata.cn
Email:info@nata.com
Tel:+86-750-3770000 Fax:+86-750-3771111
Address:380JinOu Road,GaoXin Zone,Jiang Men City,Guangdong,China

## Nata

Client:
LumCAT: 3-2031-M
Luminaire: 92.70.127.00

| | |
|---|---|
| Report No: nt0100 | Voltage(V): 220.5000 |
| Test No: NATA07 | Current(A): 0.1000 |
| LampCAT: LUMINUS CLM-9-AA40 | Power (W): 12.1500 |
| Lamp flux(lm): 1234.0 | PF: 0.5460 |
| Number of Lamps: 1 | Ballast type: AC |
| Length(mm): 0 | Width(mm): 0 |
| Phm Type: C | Height(mm): 0 |

## Photometric Results

Lumens(lm): 1114.15, Efficiency(%): 90.29% , Luminous Efficacy(lm/W): 91.70
Central intensity(cd): 11577.080, Maximum intensity(cd): 11577.080
Angle of maximum intensity: C=0.0 γ=0.0
Beam Angle(50%Imax): [C0/180]Total=11.8
[C90/270]Total=11.8
Field angle(10%Imax): [C0/180]Total=24.0
[C90/270]Total=24.0
Maximum s/h(1/2): C0_180=0.20 C90_270=0.20
Maximum s/h(1/4): C0_180=0.21 C90_270=0.21
Up flux rate of lamp(%): 0.00%
Down flux rate of lamp(%): 90.29%
Up flux rate of LUM(%): - -
Down flux rate of LUM(%): 100.00%
CIE Type : Direct lighting
Output flux ratio in π solid angle : 98.883%

## Zonal flux distribution table



| γ(°) | Average I(cd) | Zonal F(lm) | Sum F(lm) | Eff Flux(%) | Eff Sum(%) |
|---|---|---|---|---|---|
| 0.0 | 11577.077 | 0.000 | 0 | .000% | .000% |
| 1.0 | 11081.188 | 10.842 | 10.842 | .879% | .973% |
| 2.0 | 9953.610 | 30.191 | 41.033 | 2.447% | 3.683% |
| 3.0 | 9380.819 | 46.242 | 87.274 | 3.747% | 7.833% |
| 4.0 | 8284.424 | 59.131 | 146.405 | 4.792% | 13.141% |
| 5.0 | 6925.154 | 65.431 | 211.836 | 5.302% | 19.013% |
| 6.0 | 5647.728 | 66.074 | 277.91 | 5.354% | 24.944% |
| 7.0 | 4439.385 | 62.611 | 340.521 | 5.074% | 30.563% |
| 8.0 | 3372.688 | 55.910 | 396.43 | 4.531% | 35.581% |
| 9.0 | 2522.985 | 47.781 | 444.211 | 3.872% | 39.870% |
| 10.0 | 2042.031 | 41.312 | 485.523 | 3.348% | 43.578% |
| 11.0 | 1479.460 | 35.187 | 520.71 | 2.851% | 46.736% |
| 12.0 | 1150.646 | 28.751 | 549.461 | 2.330% | 49.316% |
| 13.0 | 892.180 | 24.243 | 573.704 | 1.965% | 51.492% |
| 14.0 | 760.893 | 21.159 | 594.863 | 1.715% | 53.391% |
| 15.0 | 669.478 | 19.637 | 614.5 | 1.591% | 55.154% |
| 16.0 | 607.141 | 18.706 | 633.206 | 1.516% | 56.833% |
| 17.0 | 569.102 | 18.317 | 651.523 | 1.484% | 58.477% |
| 18.0 | 543.621 | 18.346 | 669.87 | 1.487% | 60.124% |
| 19.0 | 523.830 | 18.571 | 688.441 | 1.505% | 61.790% |
| 20.0 | 508.175 | 18.889 | 707.33 | 1.531% | 63.486% |
| 21.0 | 496.087 | 19.284 | 726.614 | 1.563% | 65.217% |
| 22.0 | 484.909 | 19.714 | 746.327 | 1.598% | 66.986% |
| 23.0 | 474.033 | 20.121 | 766.448 | 1.631% | 68.792% |
| 24.0 | 465.321 | 20.538 | 786.986 | 1.664% | 70.635% |
| 25.0 | 457.421 | 20.981 | 807.967 | 1.700% | 72.518% |
| 26.0 | 449.364 | 21.405 | 829.372 | 1.735% | 74.440% |
| 27.0 | 442.259 | 21.814 | 851.186 | 1.768% | 76.397% |
| 28.0 | 435.553 | 22.224 | 873.41 | 1.801% | 78.392% |
| 29.0 | 428.291 | 22.601 | 896.011 | 1.831% | 80.421% |
| 30.0 | 419.985 | 22.903 | 918.914 | 1.856% | 82.476% |
| 31.0 | 412.990 | 23.180 | 942.094 | 1.878% | 84.557% |
| 32.0 | 404.916 | 23.432 | 965.526 | 1.899% | 86.660% |
| 33.0 | 391.685 | 23.468 | 988.994 | 1.902% | 88.766% |
| 34.0 | 361.882 | 22.805 | 1011.8 | 1.848% | 90.813% |
| 35.0 | 314.881 | 21.018 | 1032.817 | 1.703% | 92.700% |
| 36.0 | 255.033 | 18.146 | 1050.964 | 1.471% | 94.328% |
| 37.0 | 208.658 | 15.123 | 1066.087 | 1.226% | 95.686% |

## Zonal flux distribution table



| γ(°) | Average I(cd) | Zonal F(lm) | Sum F(lm) | Eff Flux(%) | Eff Sum(%) |
|---|---|---|---|---|---|
| 38.0 | 141.362 | 11.683 | 1077.77 | .947% | 96.734% |
| 39.0 | 79.994 | 7.555 | 1085.325 | .612% | 97.412% |
| 40.0 | 33.149 | 3.946 | 1089.271 | .320% | 97.767% |
| 41.0 | 18.150 | 1.827 | 1091.098 | .148% | 97.931% |
| 42.0 | 11.166 | 1.065 | 1092.163 | .086% | 98.026% |
| 43.0 | 8.880 | 0.743 | 1092.906 | .060% | 98.093% |
| 44.0 | 7.865 | 0.632 | 1093.538 | .051% | 98.150% |
| 45.0 | 7.413 | 0.587 | 1094.125 | .048% | 98.202% |
| 46.0 | 7.135 | 0.569 | 1094.694 | .046% | 98.253% |
| 47.0 | 6.891 | 0.558 | 1095.252 | .045% | 98.303% |
| 48.0 | 6.670 | 0.548 | 1095.8 | .044% | 98.353% |
| 49.0 | 6.456 | 0.539 | 1096.339 | .044% | 98.401% |
| 50.0 | 6.230 | 0.529 | 1096.868 | .043% | 98.448% |
| 51.0 | 6.050 | 0.520 | 1097.387 | .042% | 98.495% |
| 52.0 | 5.876 | 0.512 | 1097.899 | .041% | 98.541% |
| 53.0 | 5.713 | 0.504 | 1098.403 | .041% | 98.586% |
| 54.0 | 5.522 | 0.495 | 1098.898 | .040% | 98.631% |
| 55.0 | 5.360 | 0.486 | 1099.384 | .039% | 98.674% |
| 56.0 | 5.209 | 0.478 | 1099.862 | .039% | 98.717% |
| 57.0 | 5.099 | 0.471 | 1100.333 | .038% | 98.759% |
| 58.0 | 4.959 | 0.465 | 1100.798 | .038% | 98.801% |
| 59.0 | 4.832 | 0.458 | 1101.256 | .037% | 98.842% |
| 60.0 | 4.704 | 0.451 | 1101.706 | .037% | 98.883% |
| 61.0 | 4.611 | 0.445 | 1102.151 | .036% | 98.923% |
| 62.0 | 4.507 | 0.439 | 1102.59 | .036% | 98.962% |
| 63.0 | 4.437 | 0.435 | 1103.025 | .035% | 99.001% |
| 64.0 | 4.333 | 0.430 | 1103.456 | .035% | 99.040% |
| 65.0 | 4.263 | 0.425 | 1103.881 | .034% | 99.078% |
| 66.0 | 4.217 | 0.423 | 1104.304 | .034% | 99.116% |
| 67.0 | 4.165 | 0.421 | 1104.726 | .034% | 99.154% |
| 68.0 | 4.118 | 0.420 | 1105.145 | .034% | 99.191% |
| 69.0 | 4.095 | 0.419 | 1105.564 | .034% | 99.229% |
| 70.0 | 4.078 | 0.420 | 1105.984 | .034% | 99.267% |
| 71.0 | 4.054 | 0.420 | 1106.404 | .034% | 99.304% |
| 72.0 | 4.020 | 0.420 | 1106.824 | .034% | 99.342% |
| 73.0 | 3.996 | 0.419 | 1107.243 | .034% | 99.380% |
| 74.0 | 3.996 | 0.420 | 1107.663 | .034% | 99.417% |
| 75.0 | 4.002 | 0.423 | 1108.086 | .034% | 99.455% |

## Zonal flux distribution table



| γ(°) | Average I(cd) | Zonal F(lm) | Sum F(lm) | Eff Flux(%) | Eff Sum(%) |
|---|---|---|---|---|---|
| 76.0 | 4.002 | 0.425 | 1108.511 | .034% | 99.493% |
| 77.0 | 4.020 | 0.428 | 1108.939 | .035% | 99.532% |
| 78.0 | 4.002 | 0.429 | 1109.368 | .035% | 99.570% |
| 79.0 | 3.938 | 0.427 | 1109.795 | .035% | 99.609% |
| 80.0 | 3.869 | 0.421 | 1110.216 | .034% | 99.646% |
| 81.0 | 3.817 | 0.416 | 1110.631 | .034% | 99.684% |
| 82.0 | 3.776 | 0.412 | 1111.043 | .033% | 99.721% |
| 83.0 | 3.718 | 0.407 | 1111.45 | .033% | 99.757% |
| 84.0 | 3.654 | 0.402 | 1111.852 | .033% | 99.793% |
| 85.0 | 3.608 | 0.396 | 1112.248 | .032% | 99.829% |
| 86.0 | 3.550 | 0.391 | 1112.64 | .032% | 99.864% |
| 87.0 | 3.498 | 0.386 | 1113.025 | .031% | 99.899% |
| 88.0 | 3.434 | 0.380 | 1113.405 | .031% | 99.933% |
| 89.0 | 3.411 | 0.375 | 1113.78 | .030% | 99.966% |
| 90.0 | 3.411 | 0.374 | 1114.154 | .030% | 100.000% |

## Zonal flux distribution table



ZONAL LUMEN SUMMARY

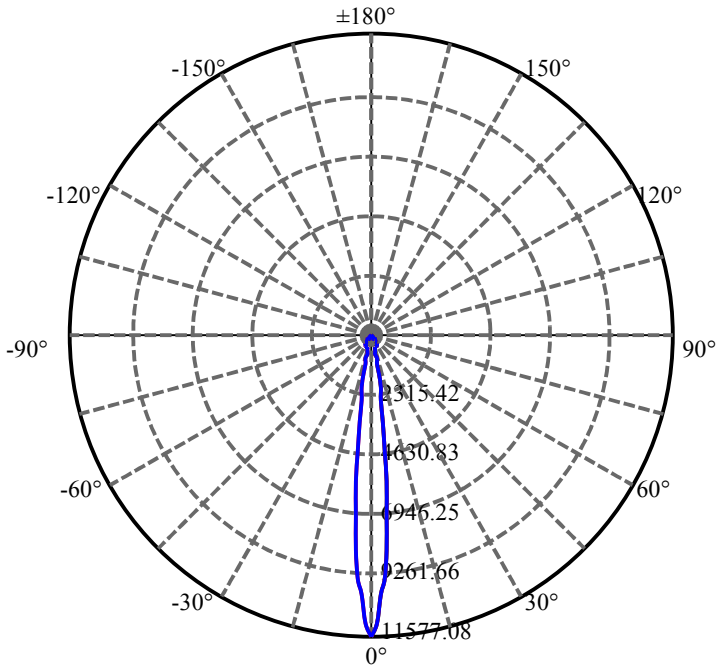
| Zone | Lumens | %Lamp | %Fixt |
|---|---|---|---|
| 0-30 | 918.91 | 74.47% | 82.48% |
| 0-40 | 1089.27 | 88.27% | 97.77% |
| 0-60 | 1101.71 | 89.28% | 98.88% |
| 0-90 | 1113.78 | 90.26% | 99.97% |
| 0-120 | 1113.78 | 90.26% | 99.97% |
| 0-180 | 1114.15 | 90.29% | 100.00% |
| 60-90 | 12.52 | 1.01% | 1.12% |
| 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% |
| 0-28.79 | 891.32 | 72.23% | 80.00% |

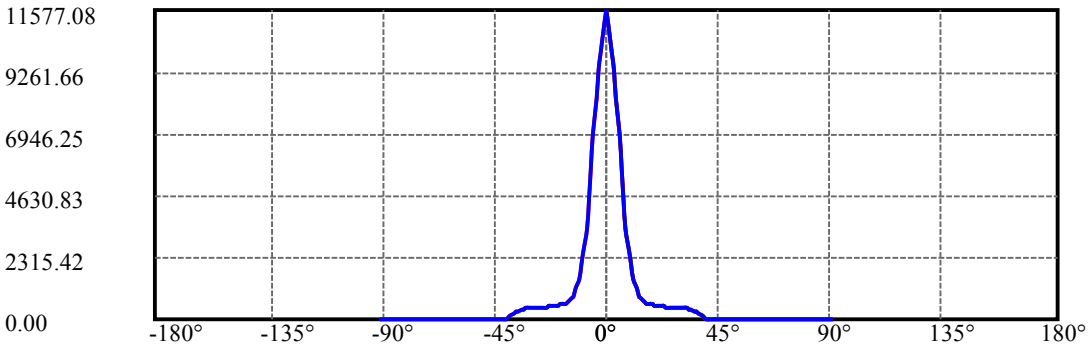
ZONAL LUMEN SUMMARY

| | |
|---|---|
| 0-10 | 485.52 |
| 10-20 | 221.81 |
| 20-30 | 211.58 |
| 30-40 | 170.36 |
| 40-50 | 7.60 |
| 50-60 | 4.84 |
| 60-70 | 4.28 |
| 70-80 | 4.23 |
| 80-90 | 3.56 |
| 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:

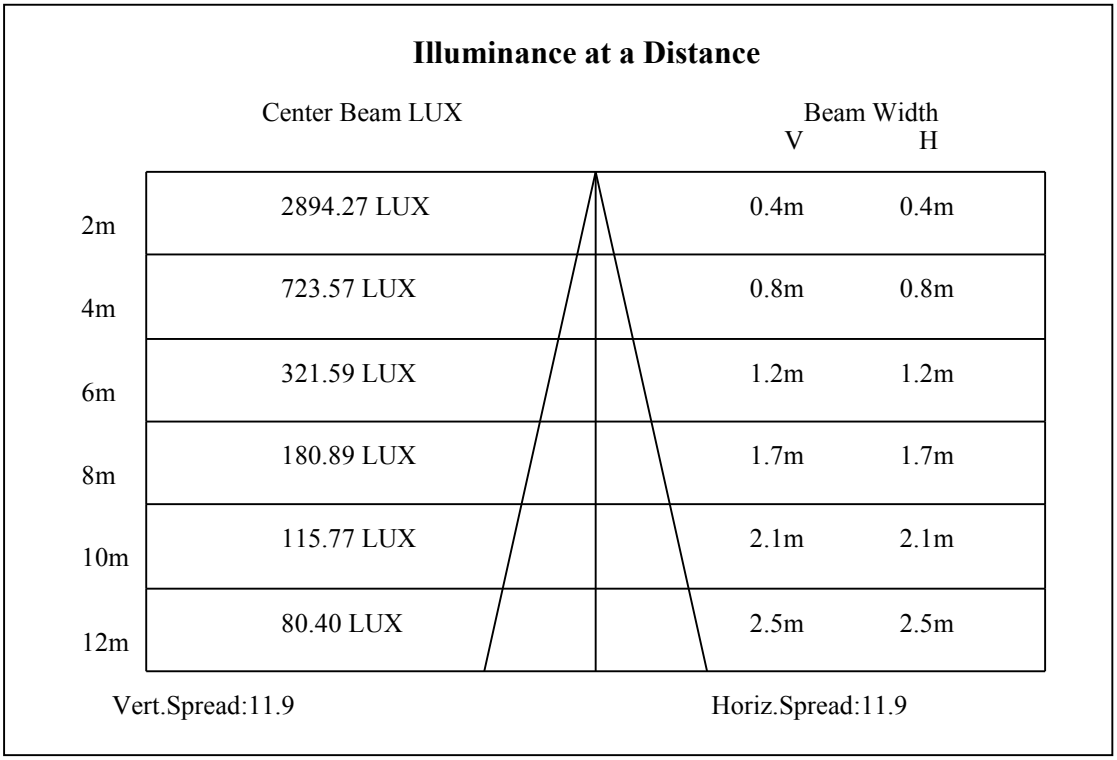
C90/C270:

Field angle(10%Imax):C0/180Left:12.0 Right:12.0
:C90/270Left:12.0 Right:12.0

Beam Angle(50%Imax):C0/180Left:5.9 Right:5.9
:C90/270Left:5.9 Right:5.9

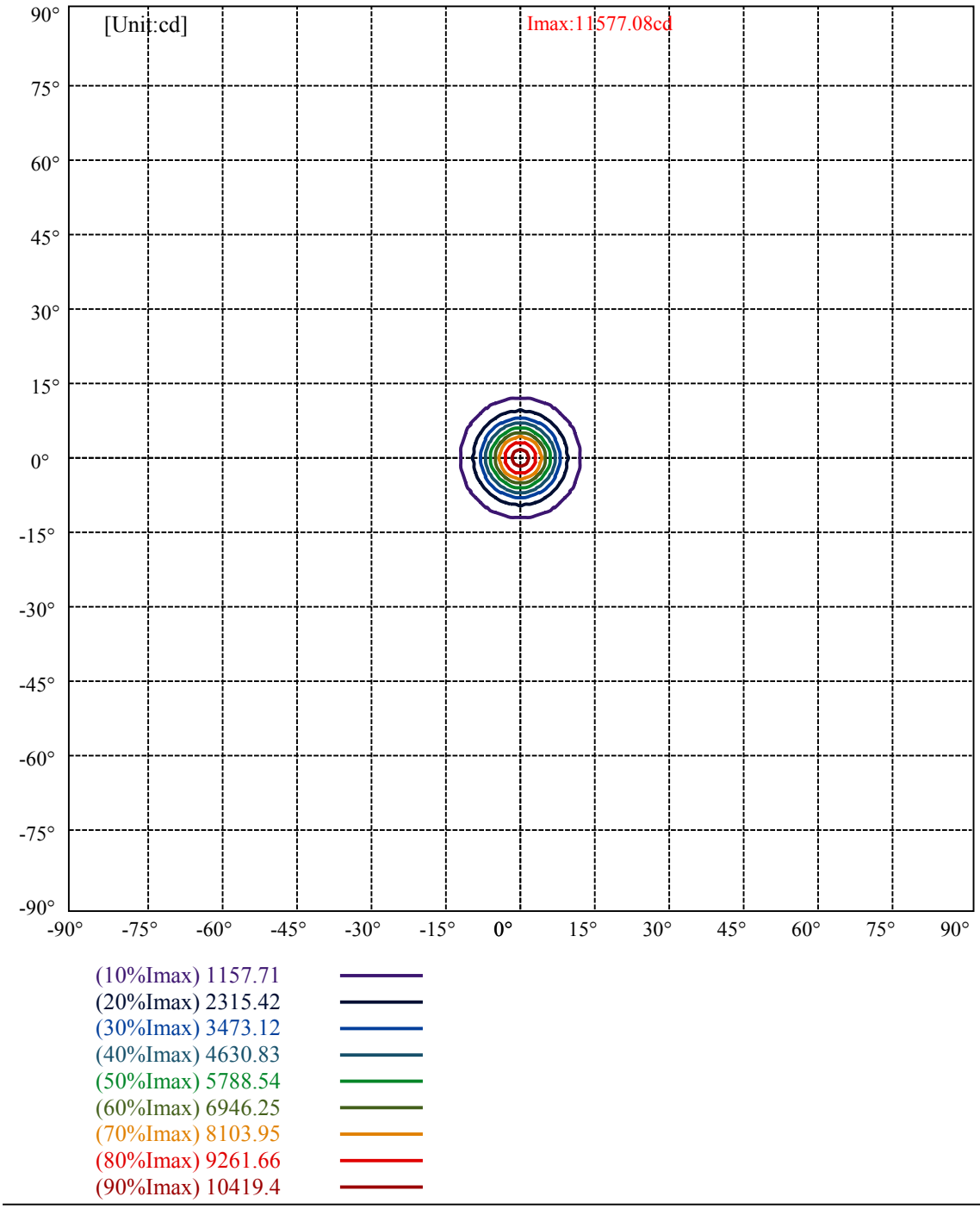
Lux distance Curve





ISO-Intensity(V-H)





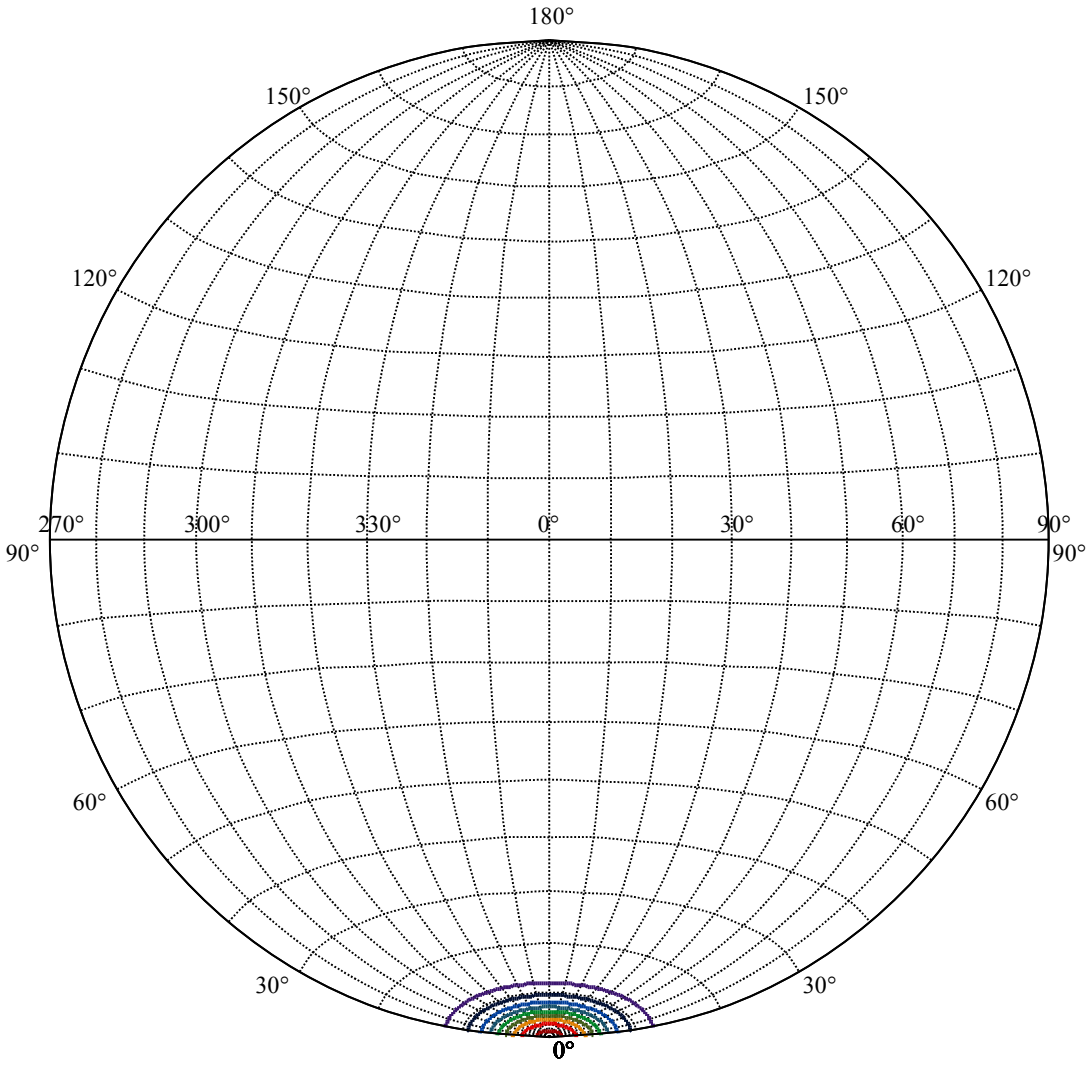

Equipment: GMS 1800
Temperature(°C): 25.0

Date: 2019/12/12
Humidity(%): 60.0%

Operator: GC2019111102
Distance(m): 6.81

ISO candela diagram on circular web





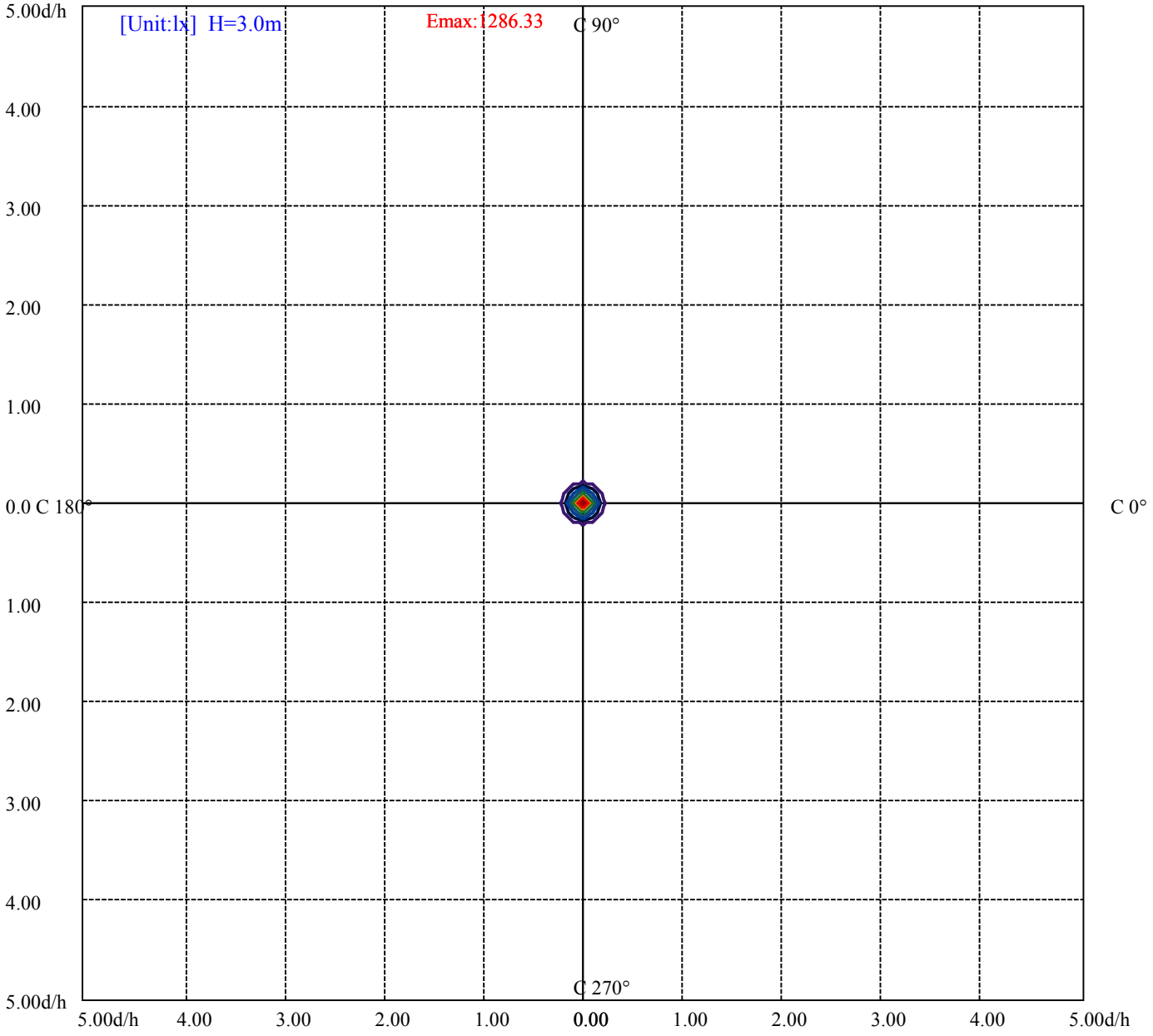

House [Unit:cd] Road

Imax:11577.08

(10%Imax) 1157.71
(20%Imax) 2315.42
(30%Imax) 3473.12
(40%Imax) 4630.83
(50%Imax) 5788.54
(60%Imax) 6946.25
(70%Imax) 8103.95
(80%Imax) 9261.66
(90%Imax) 10419.4

## ISO illuminance diagram





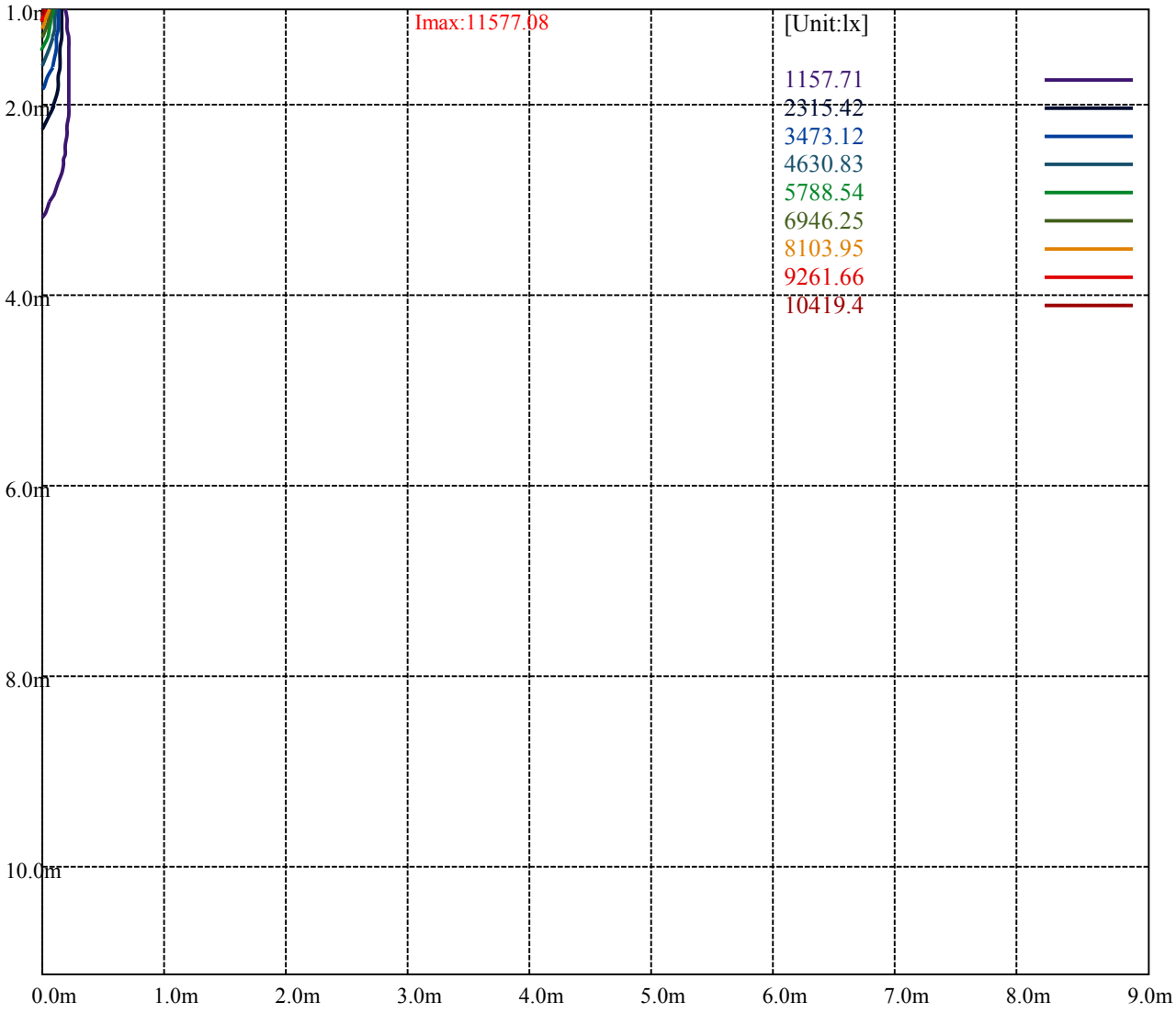

Equipment: GMS 1800
Temperature(°C): 25.0

Date: 2019/12/12
Humidity(%): 60.0%

Operator: GC2019111102
Distance(m): 6.81

## Space ISO Lux diagram






Equipment: GMS 1800
Temperature(°C): 25.0

Date: 2019/12/12
Humidity(%): 60.0%

Operator: GC2019111102
Distance(m): 6.81

## Luminance Limitting Curve(no luminous side)



Luminance Table

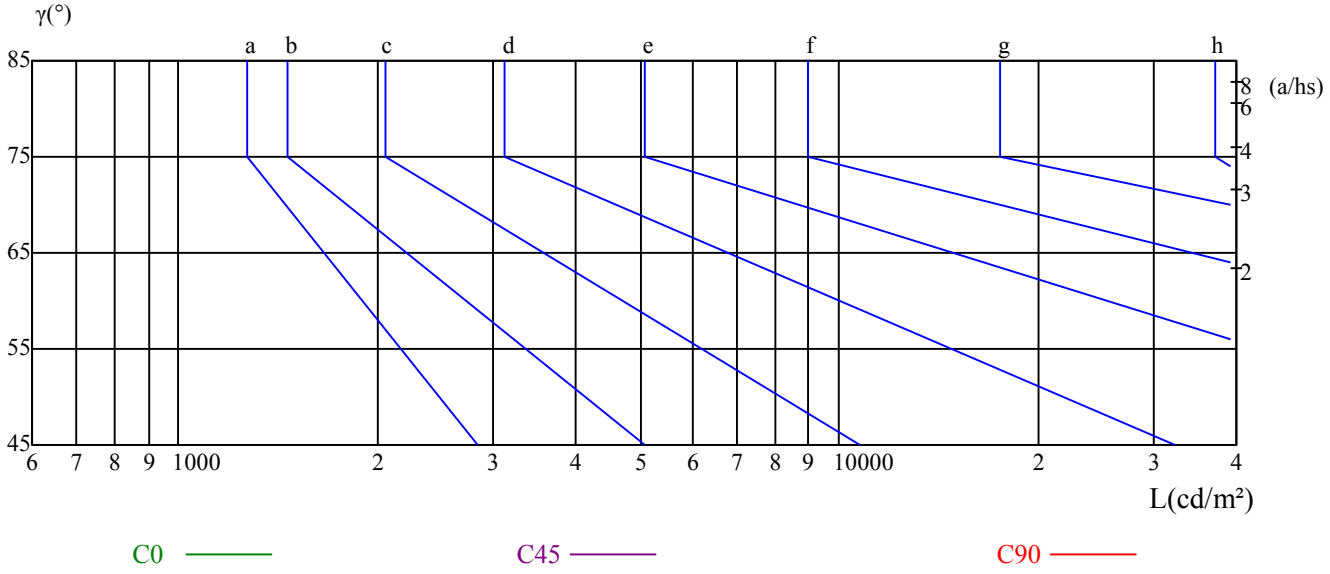
| γ | 45 | 50 | 55 | 60 | 65 | 70 | 75 | 80 | 85 |
|---|---|---|---|---|---|---|---|---|---|
| C0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| C45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| C90 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| L(Hor)(65) | L(Ver)(65) | L45(65) | L(Hor)(75) | L(Ver)(75) | L45(75) | L(Hor)(85) | L(Ver)(85) | L45(85) |
|---|---|---|---|---|---|---|---|---|
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Glare Table

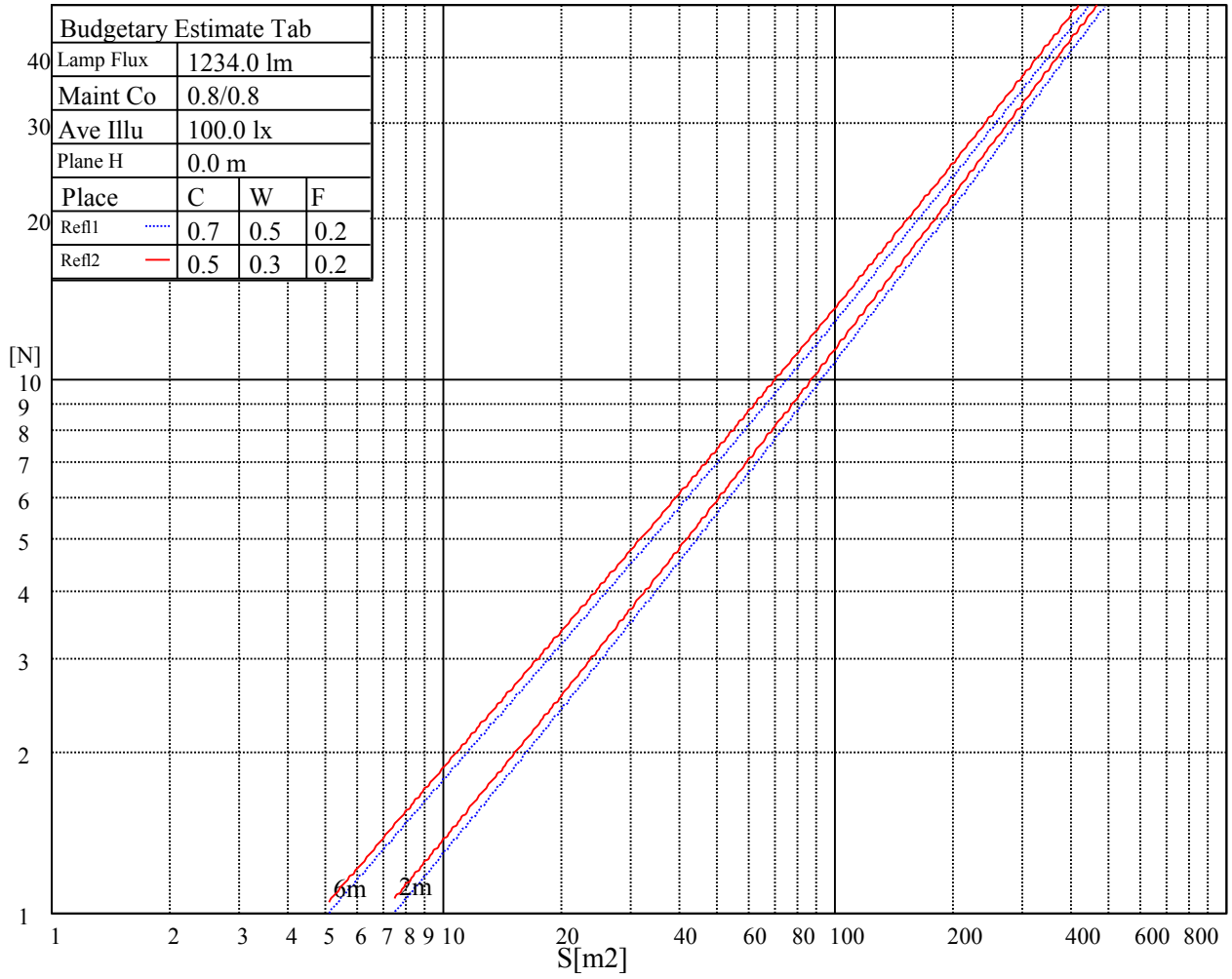
| Glare | Quality | Service Values Illuminance(lx) | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 1.15 | A | 2000 | 1000 | 500 | <=300 | | | | |
| 1.5 | B | | 2000 | 1000 | 500 | <=300 | | | |
| 1.85 | C | | | 2000 | 1000 | 500 | <=300 | | |
| 2.2 | D | | | | 2000 | 1000 | 500 | <=300 |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

Luminance Limitting Curve



## Budgetary Estimate Table






Equipment: GMS 1800
Temperature(°C): 25.0

Date: 2019/12/12
Humidity(%): 60.0%

Operator: GC2019111102
Distance(m): 6.81

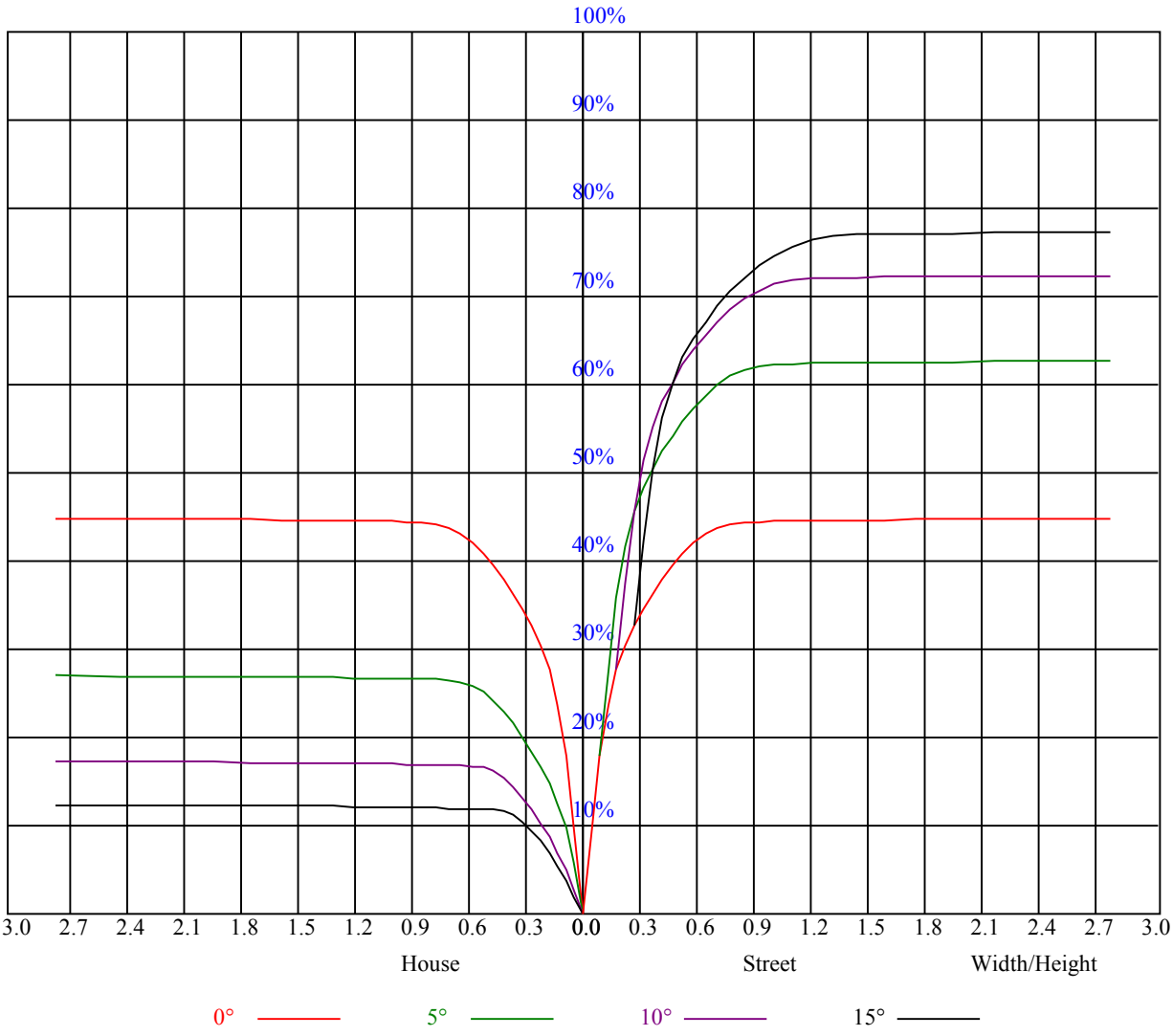
## Utilization factor table for indoor luminaire



| 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 | 1.01 | 0.99 | 0.98 | 0.99 | 0.98 | 0.96 | 0.96 | 0.95 | 0.93 | 0.93 | 0.91 | 0.91 | 0.89 | 0.89 | 0.88 | 0.86 |
| 2 | 0.96 | 0.93 | 0.91 | 0.95 | 0.92 | 0.90 | 0.92 | 0.90 | 0.88 | 0.89 | 0.87 | 0.86 | 0.87 | 0.85 | 0.84 | 0.83 |
| 3 | 0.92 | 0.88 | 0.85 | 0.90 | 0.87 | 0.85 | 0.88 | 0.85 | 0.83 | 0.86 | 0.84 | 0.82 | 0.84 | 0.82 | 0.81 | 0.80 |
| 4 | 0.88 | 0.84 | 0.81 | 0.87 | 0.83 | 0.80 | 0.85 | 0.82 | 0.79 | 0.83 | 0.81 | 0.78 | 0.82 | 0.79 | 0.78 | 0.76 |
| 5 | 0.84 | 0.80 | 0.77 | 0.83 | 0.80 | 0.77 | 0.82 | 0.79 | 0.76 | 0.80 | 0.78 | 0.75 | 0.79 | 0.77 | 0.75 | 0.74 |
| 6 | 0.81 | 0.77 | 0.74 | 0.80 | 0.76 | 0.74 | 0.79 | 0.76 | 0.73 | 0.78 | 0.75 | 0.73 | 0.77 | 0.74 | 0.72 | 0.71 |
| 7 | 0.78 | 0.74 | 0.71 | 0.77 | 0.74 | 0.71 | 0.76 | 0.73 | 0.71 | 0.75 | 0.72 | 0.70 | 0.75 | 0.72 | 0.70 | 0.69 |
| 8 | 0.75 | 0.71 | 0.69 | 0.75 | 0.71 | 0.69 | 0.74 | 0.71 | 0.68 | 0.73 | 0.70 | 0.68 | 0.73 | 0.70 | 0.68 | 0.67 |
| 9 | 0.73 | 0.69 | 0.66 | 0.73 | 0.69 | 0.66 | 0.72 | 0.69 | 0.66 | 0.71 | 0.68 | 0.66 | 0.71 | 0.68 | 0.66 | 0.65 |
| 10 | 0.71 | 0.67 | 0.65 | 0.71 | 0.67 | 0.64 | 0.70 | 0.67 | 0.64 | 0.69 | 0.66 | 0.64 | 0.69 | 0.66 | 0.64 | 0.63 |

## Coefficient Utilization Curve

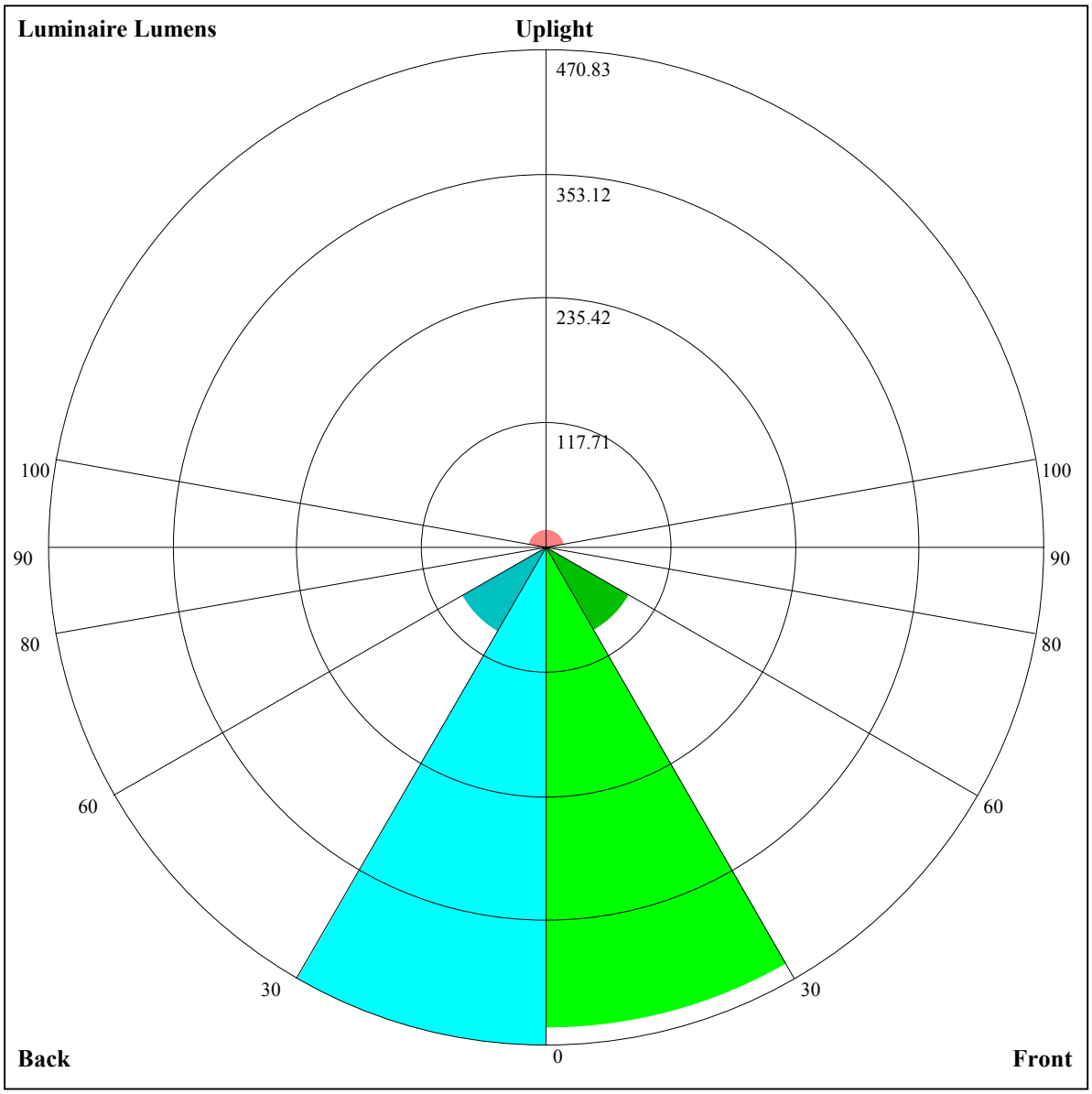





Equipment: GMS 1800
Temperature(°C): 25.0

Date: 2019/12/12
Humidity(%): 60.0%

Operator: GC2019111102
Distance(m): 6.81




Luminaire Lumens:
FL=455.48,FM=90.37,FH=4.08,FVH=1.92
BL=470.83,BM=92.4,BH=4.44,BVH=2.03
UL=3.72,UH=17.71

BUG Rating:B1-U2-G0

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 | 11499.35 | 10548.08 | 8830.14 | 8830.14 | 7469.59 | 6142.46 | 4915.09 | 3791.66 | 2829.72 |
| 45.0 | 11675.68 | 11527.19 | 10858.99 | 9819.55 | 8552.74 | 7188.48 | 5856.71 | 4631.66 | 3527.26 |
| 90.0 | 11336.94 | 8924.34 | 8924.34 | 8096.04 | 6684.91 | 5346.64 | 4139.22 | 3064.99 | 2189.82 |
| 135.0 | 11796.33 | 11555.04 | 10794.02 | 9680.34 | 8362.49 | 6975.03 | 5610.77 | 4385.72 | 3290.60 |
| 180.0 | 11499.35 | 11582.88 | 11104.92 | 10200.06 | 9007.49 | 7652.51 | 6306.82 | 5030.73 | 3870.64 |
| 225.0 | 11675.68 | 11271.98 | 8660.77 | 8660.77 | 8389.77 | 6994.42 | 5661.72 | 4440.38 | 3352.69 |
| 270.0 | 11336.94 | 11796.33 | 11671.04 | 10974.99 | 9870.59 | 8566.66 | 7202.40 | 5870.63 | 4668.78 |
| 315.0 | 11796.33 | 11443.67 | 8784.66 | 8784.66 | 7937.80 | 6535.03 | 5489.10 | 4299.32 | 3251.99 |
| 360.0 | 11499.35 | 10548.08 | 8830.14 | 8830.14 | 7469.59 | 6142.46 | 4915.09 | 3791.66 | 2829.72 |

| C/γ(°) | 9.0 | 10.0 | 11.0 | 12.0 | 13.0 | 14.0 | 15.0 | 16.0 | 17.0 |
|---|---|---|---|---|---|---|---|---|---|
| 0.0 | 2060.82 | 1525.79 | 890.34 | 890.34 | 803.98 | 737.02 | 630.48 | 582.55 | 561.99 |
| 45.0 | 2599.19 | 2599.19 | 1315.12 | 1131.36 | 916.05 | 772.66 | 676.61 | 612.11 | 569.88 |
| 90.0 | 1572.66 | 888.81 | 888.81 | 800.74 | 697.40 | 627.70 | 581.67 | 550.95 | 530.07 |
| 135.0 | 2705.92 | 2705.92 | 1325.33 | 1033.91 | 848.76 | 727.65 | 647.37 | 595.40 | 560.13 |
| 180.0 | 2849.77 | 2492.46 | 2492.46 | 1122.08 | 939.71 | 784.26 | 681.71 | 615.35 | 572.66 |
| 225.0 | 2440.40 | 1747.60 | 1119.76 | 875.26 | 816.79 | 707.14 | 659.99 | 587.23 | 556.00 |
| 270.0 | 3582.94 | 2645.59 | 2483.18 | 2483.18 | 1246.44 | 986.12 | 816.75 | 708.16 | 633.92 |
| 315.0 | 2372.19 | 1730.89 | 1320.69 | 868.30 | 868.30 | 744.59 | 661.25 | 605.38 | 568.16 |
| 360.0 | 2060.82 | 1525.79 | 890.34 | 890.34 | 803.98 | 737.02 | 630.48 | 582.55 | 561.99 |

| C/γ(°) | 18.0 | 19.0 | 20.0 | 21.0 | 22.0 | 23.0 | 24.0 | 25.0 | 26.0 |
|---|---|---|---|---|---|---|---|---|---|
| 0.0 | 528.86 | 519.11 | 505.24 | 494.10 | 483.99 | 474.52 | 465.94 | 457.86 | 450.48 |
| 45.0 | 542.04 | 523.48 | 508.16 | 494.71 | 483.57 | 473.36 | 465.01 | 457.12 | 449.23 |
| 90.0 | 516.89 | 502.83 | 487.93 | 478.79 | 469.05 | 459.90 | 451.88 | 444.40 | 437.07 |
| 135.0 | 536.47 | 517.44 | 502.59 | 489.14 | 478.00 | 468.26 | 458.98 | 454.34 | 443.20 |
| 180.0 | 545.29 | 526.26 | 511.88 | 499.35 | 487.75 | 477.07 | 467.33 | 459.44 | 451.09 |
| 225.0 | 542.41 | 524.54 | 510.30 | 497.95 | 486.96 | 476.61 | 467.14 | 458.79 | 451.18 |
| 270.0 | 585.19 | 553.17 | 530.90 | 514.20 | 501.20 | 488.21 | 477.54 | 466.86 | 459.44 |
| 315.0 | 551.83 | 523.80 | 508.40 | 500.46 | 488.77 | 474.33 | 468.77 | 460.55 | 453.22 |
| 360.0 | 528.86 | 519.11 | 505.24 | 494.10 | 483.99 | 474.52 | 465.94 | 457.86 | 450.48 |

| C/γ(°) | 27.0 | 28.0 | 29.0 | 30.0 | 31.0 | 32.0 | 33.0 | 34.0 | 35.0 |
|---|---|---|---|---|---|---|---|---|---|
| 0.0 | 443.43 | 436.75 | 428.30 | 420.83 | 413.92 | 406.03 | 391.83 | 347.98 | 287.52 |
| 45.0 | 442.27 | 434.85 | 430.21 | 418.60 | 414.43 | 407.00 | 393.55 | 374.99 | 324.41 |
| 90.0 | 429.79 | 422.41 | 413.87 | 406.40 | 399.21 | 389.28 | 350.86 | 292.48 | 227.10 |
| 135.0 | 436.24 | 431.60 | 424.17 | 415.82 | 407.93 | 400.04 | 392.62 | 370.81 | 320.69 |
| 180.0 | 443.20 | 435.77 | 427.89 | 419.53 | 411.18 | 403.76 | 398.65 | 368.49 | 338.79 |
| 225.0 | 444.45 | 437.86 | 430.16 | 421.85 | 414.52 | 406.82 | 392.80 | 351.64 | 292.16 |
| 270.0 | 452.48 | 445.52 | 438.56 | 431.60 | 425.10 | 415.82 | 410.25 | 402.36 | 388.44 |
| 315.0 | 446.21 | 439.67 | 433.18 | 425.24 | 417.63 | 410.58 | 402.92 | 386.31 | 339.95 |
| 360.0 | 443.43 | 436.75 | 428.30 | 420.83 | 413.92 | 406.03 | 391.83 | 347.98 | 287.52 |

| C/γ(°) | 36.0 | 37.0 | 38.0 | 39.0 | 40.0 | 41.0 | 42.0 | 43.0 | 44.0 |
|---|---|---|---|---|---|---|---|---|---|
| 0.0 | 233.08 | 147.24 | 84.55 | 45.57 | 17.63 | 12.90 | 9.10 | 8.35 | 7.56 |
| 45.0 | 259.44 | 259.44 | 105.47 | 53.60 | 22.23 | 14.29 | 9.79 | 8.40 | 7.93 |
| 90.0 | 162.88 | 99.67 | 47.38 | 20.05 | 14.06 | 11.00 | 8.40 | 7.84 | 7.42 |
| 135.0 | 258.05 | 232.99 | 173.41 | 69.93 | 28.45 | 16.94 | 11.55 | 9.23 | 8.21 |
| 180.0 | 278.93 | 252.48 | 239.49 | 80.42 | 34.11 | 17.68 | 12.11 | 8.72 | 8.03 |
| 225.0 | 223.57 | 179.81 | 88.77 | 40.65 | 23.02 | 15.03 | 10.58 | 9.05 | 8.12 |
| 270.0 | 345.29 | 284.96 | 245.06 | 245.06 | 89.33 | 39.86 | 17.35 | 11.55 | 8.63 |
| 315.0 | 279.02 | 212.67 | 146.77 | 84.69 | 36.38 | 17.49 | 10.44 | 7.89 | 7.01 |
| 360.0 | 233.08 | 147.24 | 84.55 | 45.57 | 17.63 | 12.90 | 9.10 | 8.35 | 7.56 |

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 | 7.19 | 6.87 | 6.64 | 6.40 | 6.17 | 5.85 | 5.66 | 5.48 | 5.29 |
| 45.0 | 7.56 | 7.24 | 7.15 | 6.77 | 6.59 | 6.36 | 6.08 | 5.85 | 5.66 |
| 90.0 | 7.19 | 6.87 | 6.59 | 6.36 | 6.13 | 5.89 | 5.66 | 5.48 | 5.34 |
| 135.0 | 7.52 | 7.29 | 7.01 | 6.68 | 6.40 | 6.17 | 5.94 | 5.75 | 5.52 |
| 180.0 | 7.75 | 7.42 | 7.15 | 7.01 | 6.82 | 6.59 | 6.45 | 6.31 | 6.22 |
| 225.0 | 7.75 | 7.47 | 7.19 | 7.05 | 6.87 | 6.64 | 6.50 | 6.36 | 6.26 |
| 270.0 | 7.66 | 7.42 | 7.05 | 6.96 | 6.73 | 6.54 | 6.40 | 6.22 | 6.03 |
| 315.0 | 6.68 | 6.50 | 6.36 | 6.13 | 5.94 | 5.80 | 5.71 | 5.57 | 5.38 |
| 360.0 | 7.19 | 6.87 | 6.64 | 6.40 | 6.17 | 5.85 | 5.66 | 5.48 | 5.29 |

| C/γ(°) | 54.0 | 55.0 | 56.0 | 57.0 | 58.0 | 59.0 | 60.0 | 61.0 | 62.0 |
|---|---|---|---|---|---|---|---|---|---|
| 0.0 | 5.06 | 4.87 | 4.69 | 4.59 | 4.50 | 4.27 | 4.18 | 4.08 | 3.90 |
| 45.0 | 5.48 | 5.20 | 5.06 | 4.87 | 4.69 | 4.55 | 4.36 | 4.32 | 4.18 |
| 90.0 | 5.06 | 4.87 | 4.78 | 4.64 | 4.45 | 4.32 | 4.22 | 4.13 | 4.04 |
| 135.0 | 5.29 | 5.10 | 4.92 | 4.78 | 4.55 | 4.45 | 4.36 | 4.18 | 4.08 |
| 180.0 | 6.03 | 5.89 | 5.75 | 5.71 | 5.61 | 5.43 | 5.29 | 5.24 | 5.15 |
| 225.0 | 6.08 | 5.94 | 5.75 | 5.75 | 5.61 | 5.57 | 5.34 | 5.24 | 5.20 |
| 270.0 | 5.94 | 5.80 | 5.66 | 5.57 | 5.48 | 5.38 | 5.24 | 5.10 | 5.01 |
| 315.0 | 5.24 | 5.20 | 5.06 | 4.87 | 4.78 | 4.69 | 4.64 | 4.59 | 4.50 |
| 360.0 | 5.06 | 4.87 | 4.69 | 4.59 | 4.50 | 4.27 | 4.18 | 4.08 | 3.90 |

| C/γ(°) | 63.0 | 64.0 | 65.0 | 66.0 | 67.0 | 68.0 | 69.0 | 70.0 | 71.0 |
|---|---|---|---|---|---|---|---|---|---|
| 0.0 | 3.90 | 3.76 | 3.71 | 3.67 | 3.57 | 3.48 | 3.48 | 3.48 | 3.43 |
| 45.0 | 4.04 | 3.90 | 3.85 | 3.76 | 3.67 | 3.67 | 3.57 | 3.48 | 3.48 |
| 90.0 | 3.90 | 3.81 | 3.71 | 3.67 | 3.57 | 3.48 | 3.53 | 3.48 | 3.39 |
| 135.0 | 3.99 | 3.90 | 3.81 | 3.76 | 3.62 | 3.57 | 3.53 | 3.53 | 3.48 |
| 180.0 | 5.01 | 4.92 | 4.92 | 4.83 | 4.78 | 4.78 | 4.73 | 4.73 | 4.73 |
| 225.0 | 5.20 | 5.06 | 4.97 | 4.92 | 4.92 | 4.87 | 4.83 | 4.83 | 4.83 |
| 270.0 | 4.97 | 4.83 | 4.73 | 4.69 | 4.78 | 4.73 | 4.69 | 4.69 | 4.69 |
| 315.0 | 4.50 | 4.50 | 4.41 | 4.45 | 4.41 | 4.36 | 4.41 | 4.41 | 4.41 |
| 360.0 | 3.90 | 3.76 | 3.71 | 3.67 | 3.57 | 3.48 | 3.48 | 3.48 | 3.43 |

| C/γ(°) | 72.0 | 73.0 | 74.0 | 75.0 | 76.0 | 77.0 | 78.0 | 79.0 | 80.0 |
|---|---|---|---|---|---|---|---|---|---|
| 0.0 | 3.34 | 3.34 | 3.34 | 3.29 | 3.25 | 3.29 | 3.29 | 3.25 | 3.25 |
| 45.0 | 3.43 | 3.39 | 3.39 | 3.39 | 3.34 | 3.25 | 3.29 | 3.25 | 3.20 |
| 90.0 | 3.34 | 3.39 | 3.34 | 3.25 | 3.25 | 3.29 | 3.29 | 3.20 | 3.20 |
| 135.0 | 3.39 | 3.39 | 3.39 | 3.39 | 3.29 | 3.29 | 3.29 | 3.29 | 3.25 |
| 180.0 | 4.73 | 4.64 | 4.78 | 4.83 | 4.97 | 5.15 | 5.01 | 4.92 | 4.78 |
| 225.0 | 4.73 | 4.69 | 4.64 | 4.64 | 4.64 | 4.55 | 4.50 | 4.50 | 4.45 |
| 270.0 | 4.78 | 4.73 | 4.69 | 4.83 | 4.92 | 5.01 | 4.97 | 4.73 | 4.55 |
| 315.0 | 4.41 | 4.41 | 4.41 | 4.41 | 4.36 | 4.32 | 4.36 | 4.36 | 4.27 |
| 360.0 | 3.34 | 3.34 | 3.34 | 3.29 | 3.25 | 3.29 | 3.29 | 3.25 | 3.25 |

| C/γ(°) | 81.0 | 82.0 | 83.0 | 84.0 | 85.0 | 86.0 | 87.0 | 88.0 | 89.0 |
|---|---|---|---|---|---|---|---|---|---|
| 0.0 | 3.20 | 3.29 | 3.20 | 3.20 | 3.16 | 3.16 | 3.20 | 3.16 | 3.16 |
| 45.0 | 3.20 | 3.20 | 3.20 | 3.16 | 3.20 | 3.16 | 3.11 | 3.11 | 3.11 |
| 90.0 | 3.20 | 3.16 | 3.20 | 3.20 | 3.16 | 3.16 | 3.16 | 3.11 | 3.20 |
| 135.0 | 3.16 | 3.20 | 3.16 | 3.20 | 3.20 | 3.16 | 3.11 | 3.16 | 3.20 |
| 180.0 | 4.64 | 4.41 | 4.27 | 4.27 | 4.13 | 4.04 | 3.94 | 3.81 | 3.71 |
| 225.0 | 4.32 | 4.22 | 4.18 | 4.04 | 3.99 | 3.90 | 3.81 | 3.71 | 3.67 |
| 270.0 | 4.59 | 4.55 | 4.45 | 4.13 | 4.08 | 3.99 | 3.85 | 3.71 | 3.67 |
| 315.0 | 4.22 | 4.18 | 4.08 | 4.04 | 3.94 | 3.85 | 3.81 | 3.71 | 3.57 |
| 360.0 | 3.20 | 3.29 | 3.20 | 3.20 | 3.16 | 3.16 | 3.20 | 3.16 | 3.16 |

Intensity data(cd)

| C/γ(°) | 90.0 |
|---|---|
| 0.0 | 3.20 |
| 45.0 | 3.16 |
| 90.0 | 3.11 |
| 135.0 | 3.16 |
| 180.0 | 3.76 |
| 225.0 | 3.71 |
| 270.0 | 3.62 |
| 315.0 | 3.57 |
| 360.0 | 3.20 |