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## Nata

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### Client:

LumCAT: 2-1795-N

Luminaire: 92.70.135.00

Report No: nata-0100

Test No: GC2018053004

LampCAT: NICHIA NFCWD084B-V3

Lamp flux(lm): 2155.2

Number of Lamps: 1

Length(mm): 69

Phm Type: C

Voltage(V): 34.2000

Current(A): 0.5000

Power (W): 17.1000

PF: 0.0000

Ballast type: DC

Width(mm): 69

Height(mm): 0

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## Photometric Results

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Lumens(lm): 1828.58, Efficiency(%): 84.85% , Luminous Efficacy(lm/W): 106.93

Central intensity(cd): 3900.057, Maximum intensity(cd): 3900.057

Angle of maximum intensity: C=0.0  $\gamma$ =0.0

Beam Angle(50%Imax): [C0/180]Total=39.2

[C90/270]Total=39.2

Field angle(10%Imax): [C0/180]Total=63.8

[C90/270]Total=63.8

Maximum s/h(1/2): C0\_180=0.64 C90\_270=0.64

Maximum s/h(1/4): C0\_180=0.63 C90\_270=0.63

Up flux rate of lamp(%): 0.00%

Down flux rate of lamp(%): 85.85%

Up flux rate of LUM(%): - -

Down flux rate of LUM(%): 100.00%

CIE Type : Direct lighting

Output flux ratio in  $\pi$  solid angle : 96.759%

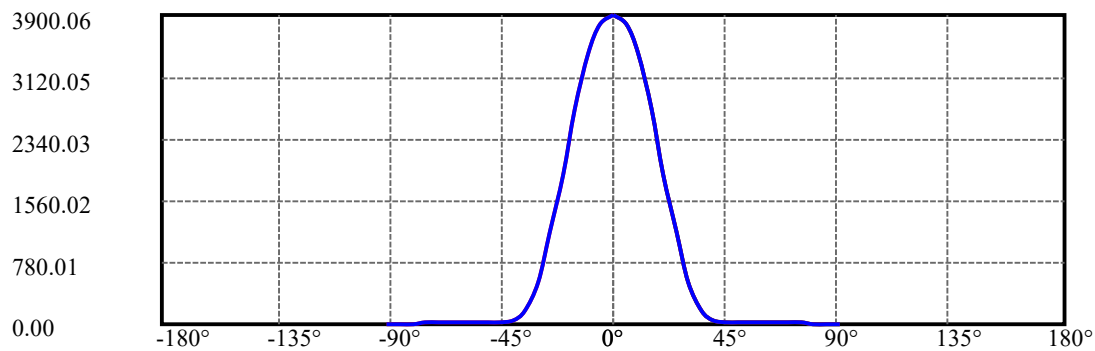
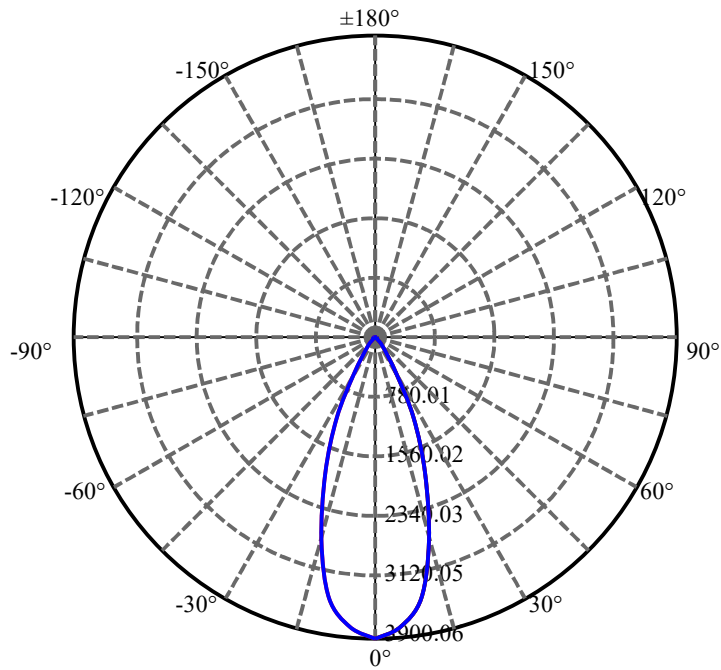
| $\gamma(^{\circ})$ | Average I(cd) | Zonal F(lm) | Sum F(lm) | Eff Flux(%) | Eff Sum(%) |
|--------------------|---------------|-------------|-----------|-------------|------------|
| 0.0                | 3900.058      | 23.323      | 23.323    | 1.082%      | 1.275%     |
| 5.0                | 3771.914      | 180.197     | 203.52    | 8.361%      | 11.130%    |
| 10.0               | 3426.642      | 326.158     | 529.678   | 15.134%     | 28.967%    |
| 15.0               | 2718.891      | 385.725     | 915.403   | 17.898%     | 50.061%    |
| 20.0               | 1886.508      | 353.671     | 1269.074  | 16.410%     | 69.402%    |
| 25.0               | 1152.895      | 267.071     | 1536.146  | 12.392%     | 84.007%    |
| 30.0               | 534.343       | 146.447     | 1682.592  | 6.795%      | 92.016%    |
| 35.0               | 159.120       | 50.027      | 1732.619  | 2.321%      | 94.752%    |
| 40.0               | 45.958        | 16.193      | 1748.812  | .751%       | 95.638%    |
| 45.0               | 30.171        | 11.694      | 1760.506  | .543%       | 96.277%    |
| 50.0               | 24.837        | 10.429      | 1770.935  | .484%       | 96.847%    |
| 55.0               | 21.830        | 9.802       | 1780.737  | .455%       | 97.383%    |
| 60.0               | 19.924        | 9.458       | 1790.195  | .439%       | 97.901%    |
| 65.0               | 17.735        | 8.810       | 1799.005  | .409%       | 98.383%    |
| 70.0               | 15.746        | 8.111       | 1807.116  | .376%       | 98.826%    |
| 75.0               | 13.943        | 7.382       | 1814.498  | .343%       | 99.230%    |
| 80.0               | 12.002        | 6.479       | 1820.977  | .301%       | 99.584%    |
| 85.0               | 9.841         | 5.374       | 1826.351  | .249%       | 99.878%    |
| 90.0               | 8.141         | 2.231       | 1828.582  | .104%       | 100.000%   |

## ZONAL LUMEN SUMMARY

| Zone    | Lumens  | %Lamp  | %Fixt   |
|---------|---------|--------|---------|
| 0-30    | 1682.59 | 78.07% | 92.02%  |
| 0-40    | 1748.81 | 81.15% | 95.64%  |
| 0-60    | 1790.19 | 83.07% | 97.90%  |
| 0-90    | 1826.35 | 84.74% | 99.88%  |
| 0-120   | 1826.35 | 84.74% | 99.88%  |
| 0-180   | 1828.58 | 84.85% | 100.00% |
| 60-90   | 45.61   | 2.12%  | 2.49%   |
| 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%   |
| 0-23.63 | 1462.87 | 67.88% | 80.00%  |

## ZONAL LUMEN SUMMARY

|         |        |
|---------|--------|
| 0-10    | 529.68 |
| 10-20   | 739.40 |
| 20-30   | 413.52 |
| 30-40   | 66.22  |
| 40-50   | 22.12  |
| 50-60   | 19.26  |
| 60-70   | 16.92  |
| 70-80   | 13.86  |
| 80-90   | 5.37   |
| 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: —————

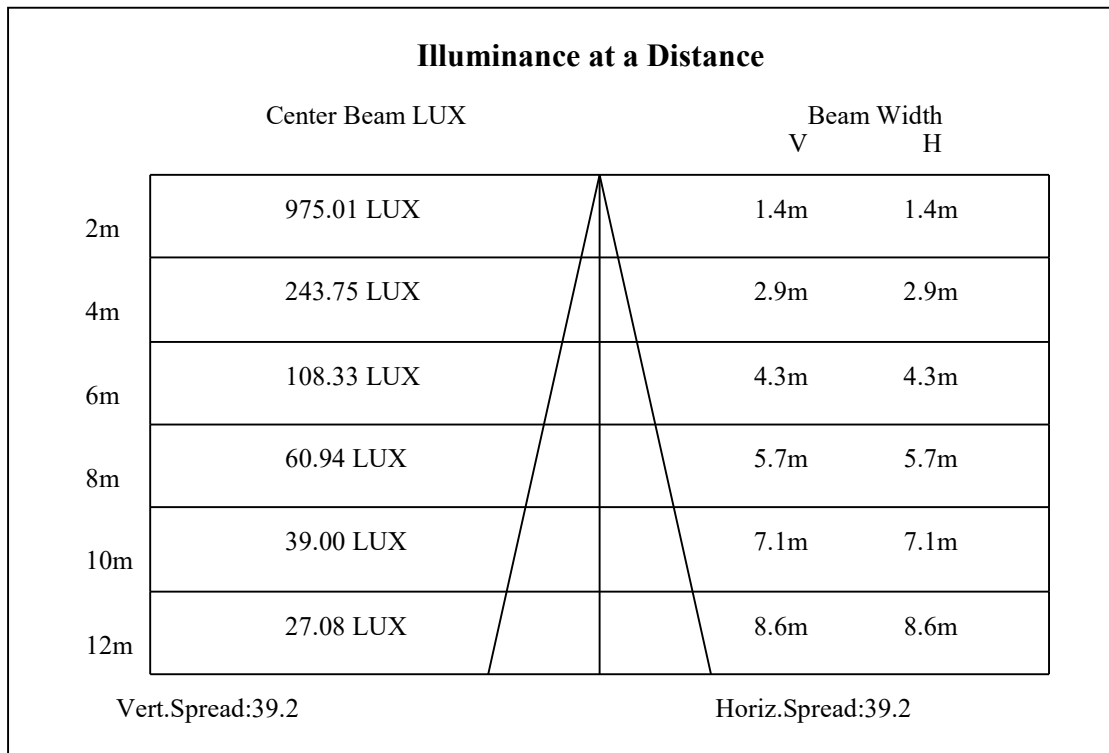
C90/C270: —————

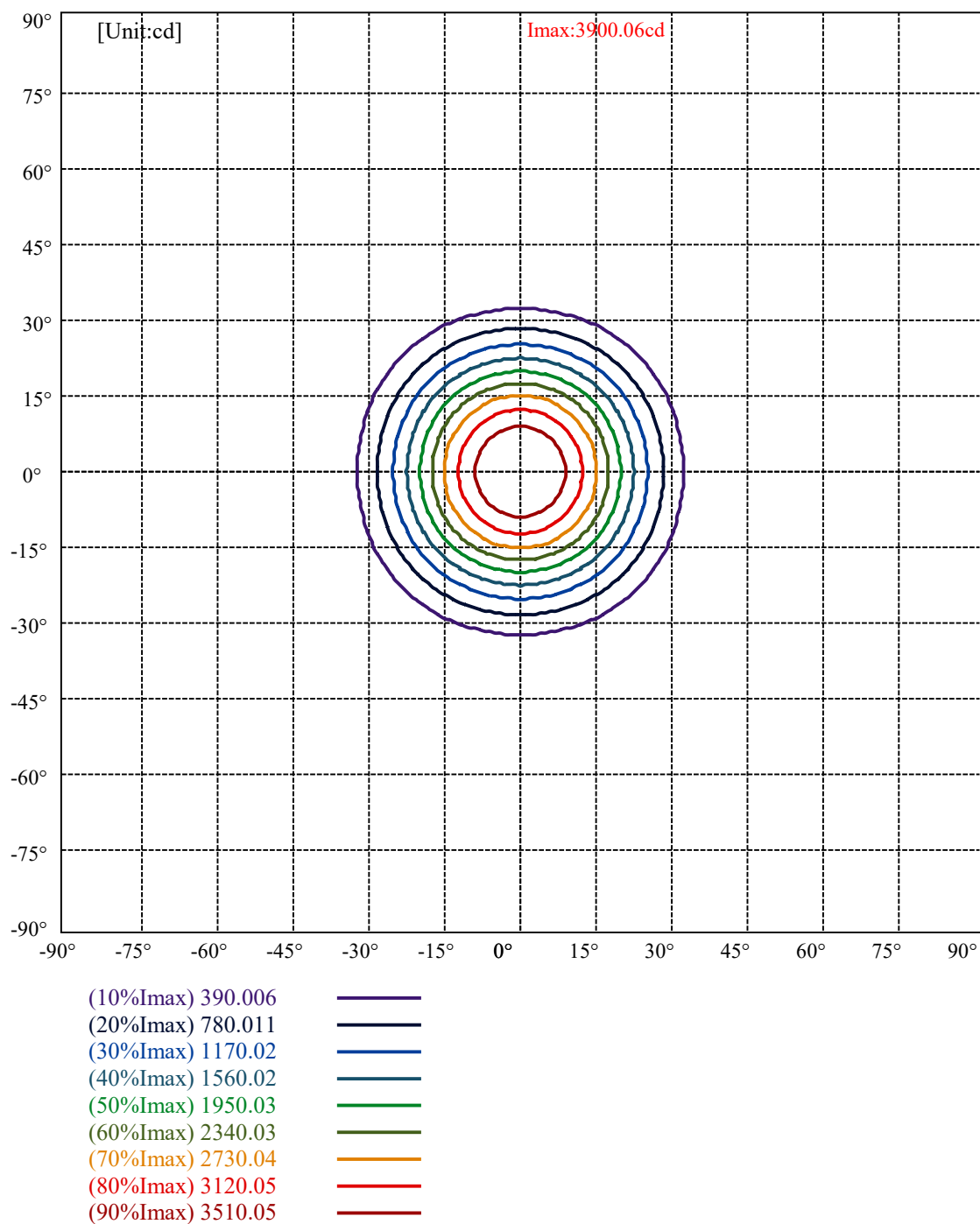
Field angle(10%Imax):C0/180Left:31.9 Right:31.9

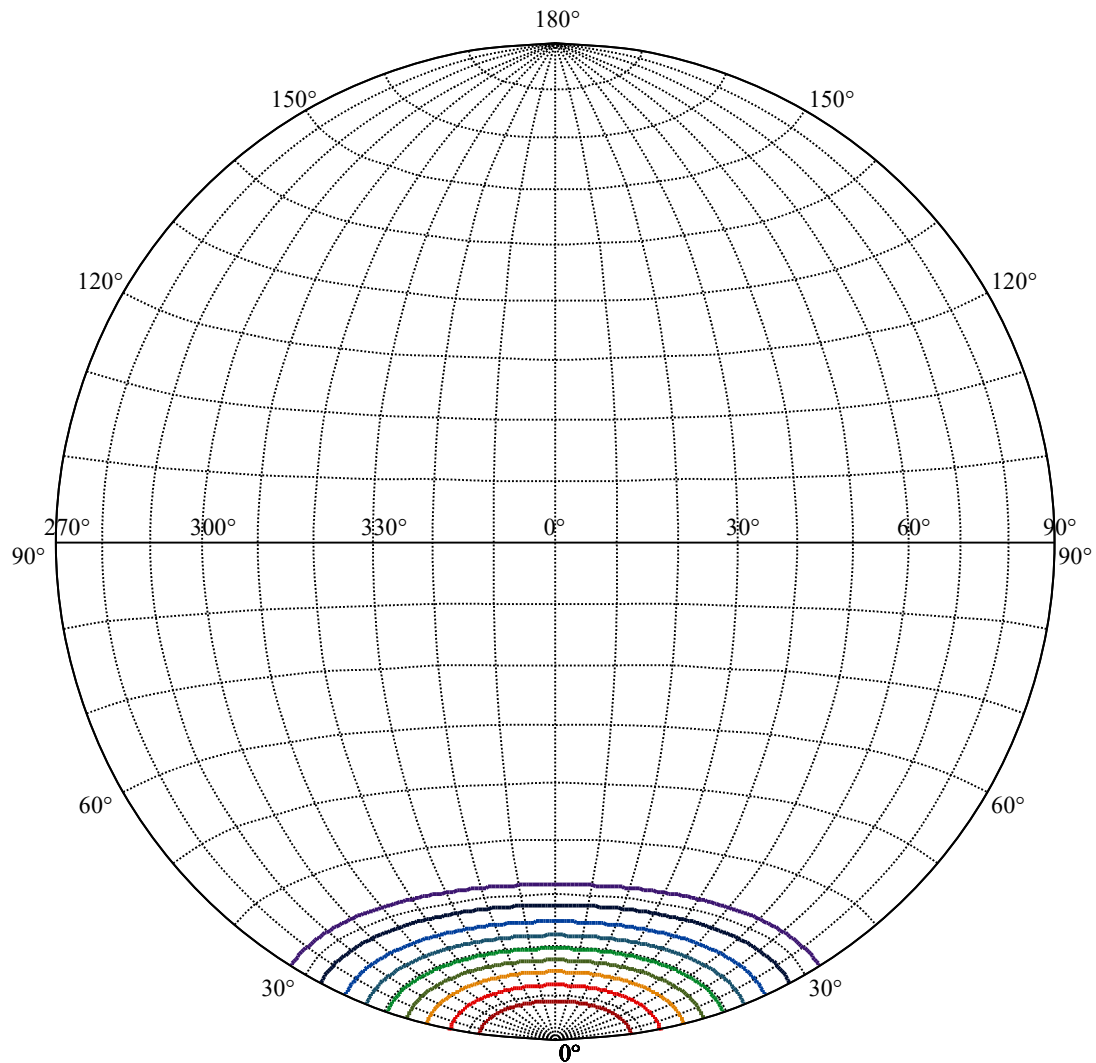
:C90/270Left:31.9 Right:31.9

Beam Angle(50%Imax):C0/180Left:19.6 Right:19.6

:C90/270Left:19.6 Right:19.6







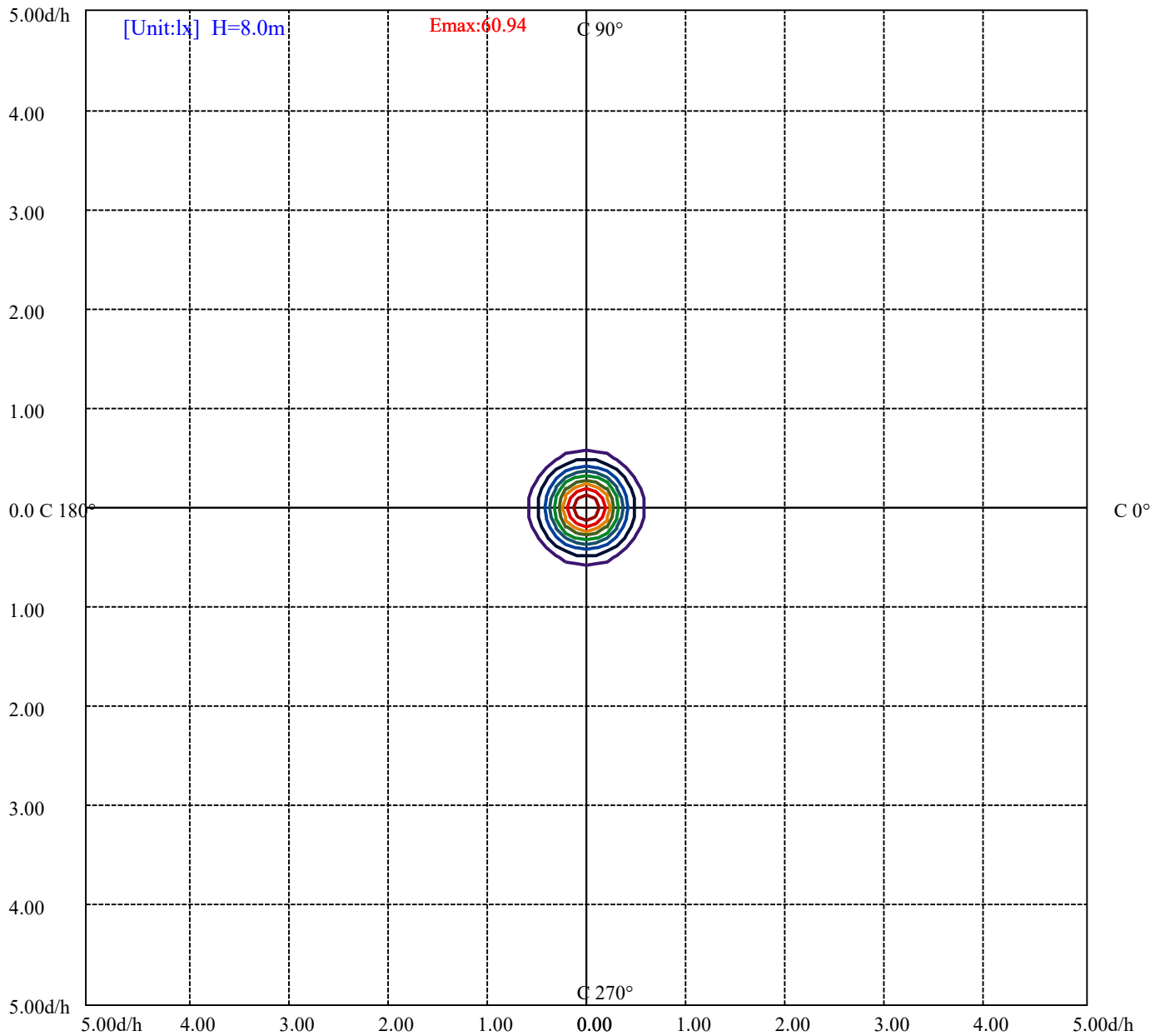
House

[Unit:cd]

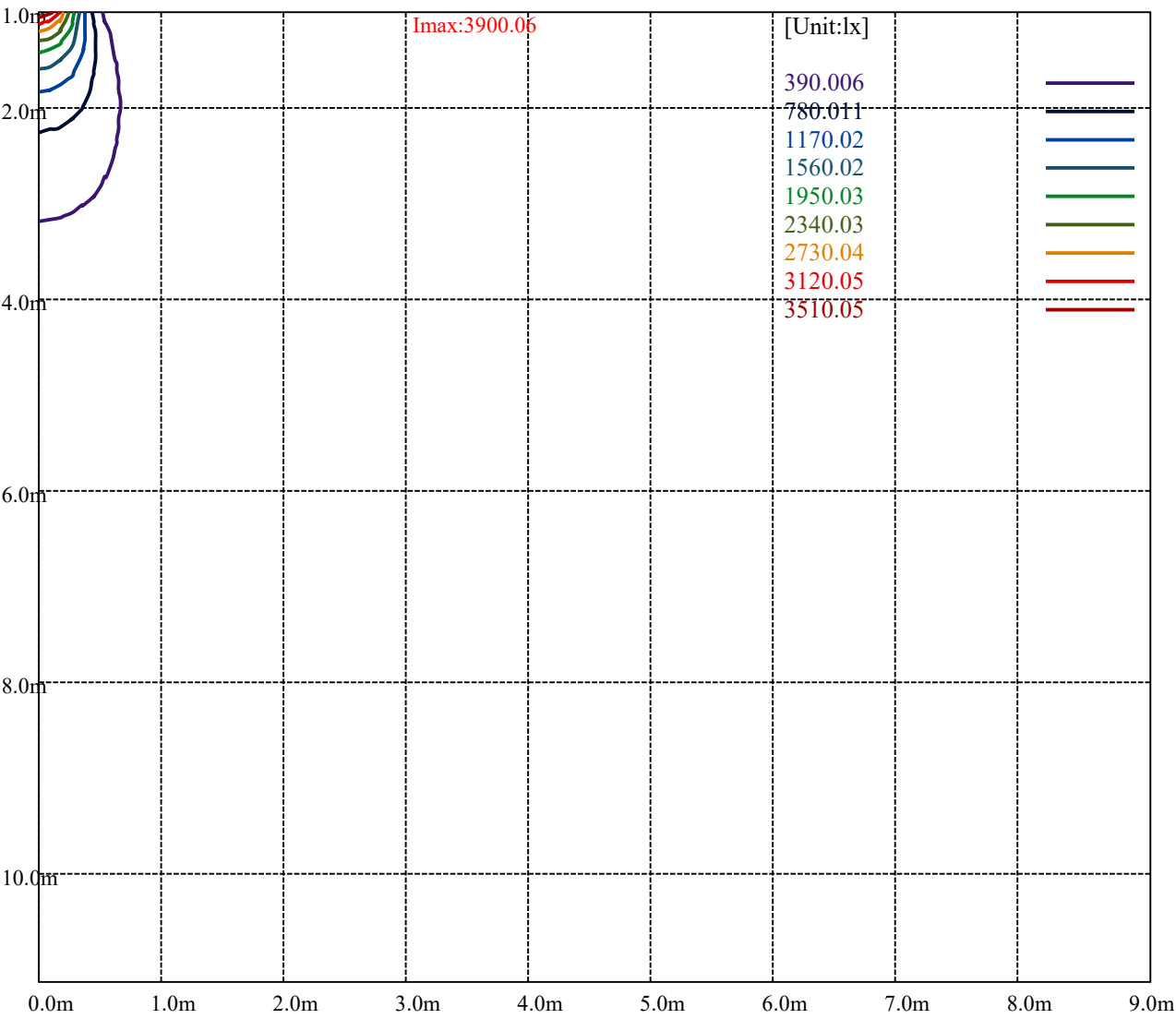
Road

**Imax:3900.06**

|           |         |   |
|-----------|---------|---|
| (10%Imax) | 390.006 | — |
| (20%Imax) | 780.011 | — |
| (30%Imax) | 1170.02 | — |
| (40%Imax) | 1560.02 | — |
| (50%Imax) | 1950.03 | — |
| (60%Imax) | 2340.03 | — |
| (70%Imax) | 2730.04 | — |
| (80%Imax) | 3120.05 | — |
| (90%Imax) | 3510.05 | — |



|                    |   |
|--------------------|---|
| (10%Emax) 6.093828 | — |
| (20%Emax) 12.18767 | — |
| (30%Emax) 18.28156 | — |
| (40%Emax) 24.37531 | — |
| (50%Emax) 30.46922 | — |
| (60%Emax) 36.56297 | — |
| (70%Emax) 42.65688 | — |
| (80%Emax) 48.75063 | — |
| (90%Emax) 54.84453 | — |



Luminance Table

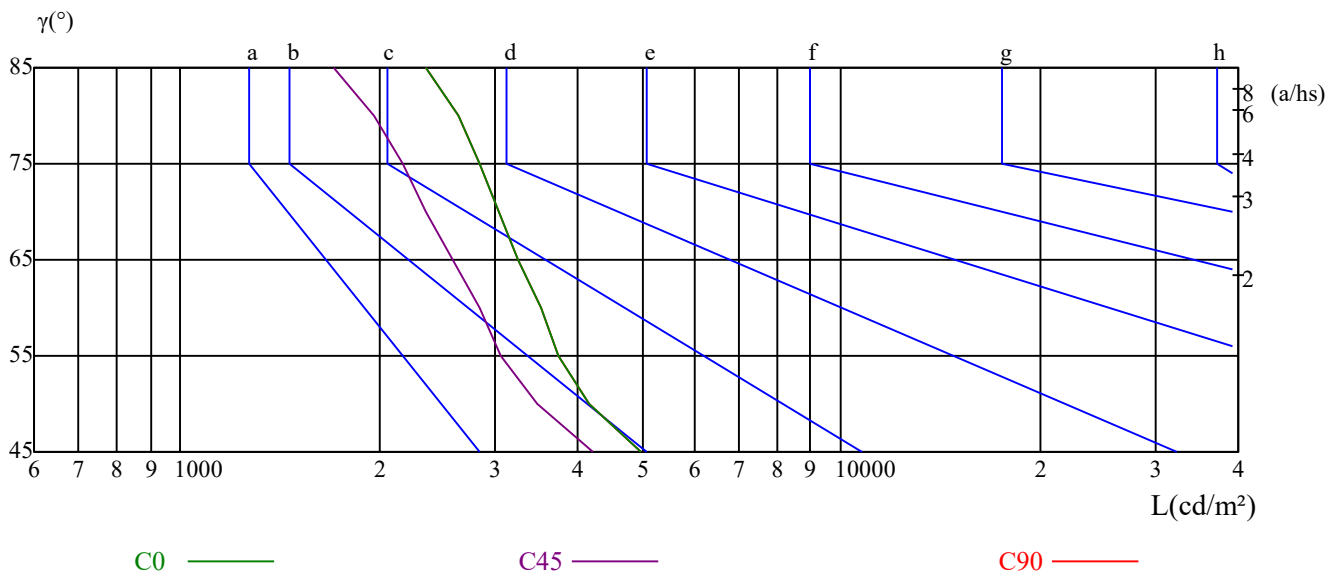
| $\gamma$ | 45   | 50   | 55   | 60   | 65   | 70   | 75   | 80   | 85   |
|----------|------|------|------|------|------|------|------|------|------|
| C0       | 4987 | 4162 | 3738 | 3516 | 3253 | 3031 | 2847 | 2630 | 2346 |
| C45      | 4213 | 3463 | 3063 | 2835 | 2579 | 2360 | 2173 | 1964 | 1708 |
| C90      | 4987 | 4162 | 3738 | 3516 | 3253 | 3031 | 2847 | 2630 | 2346 |

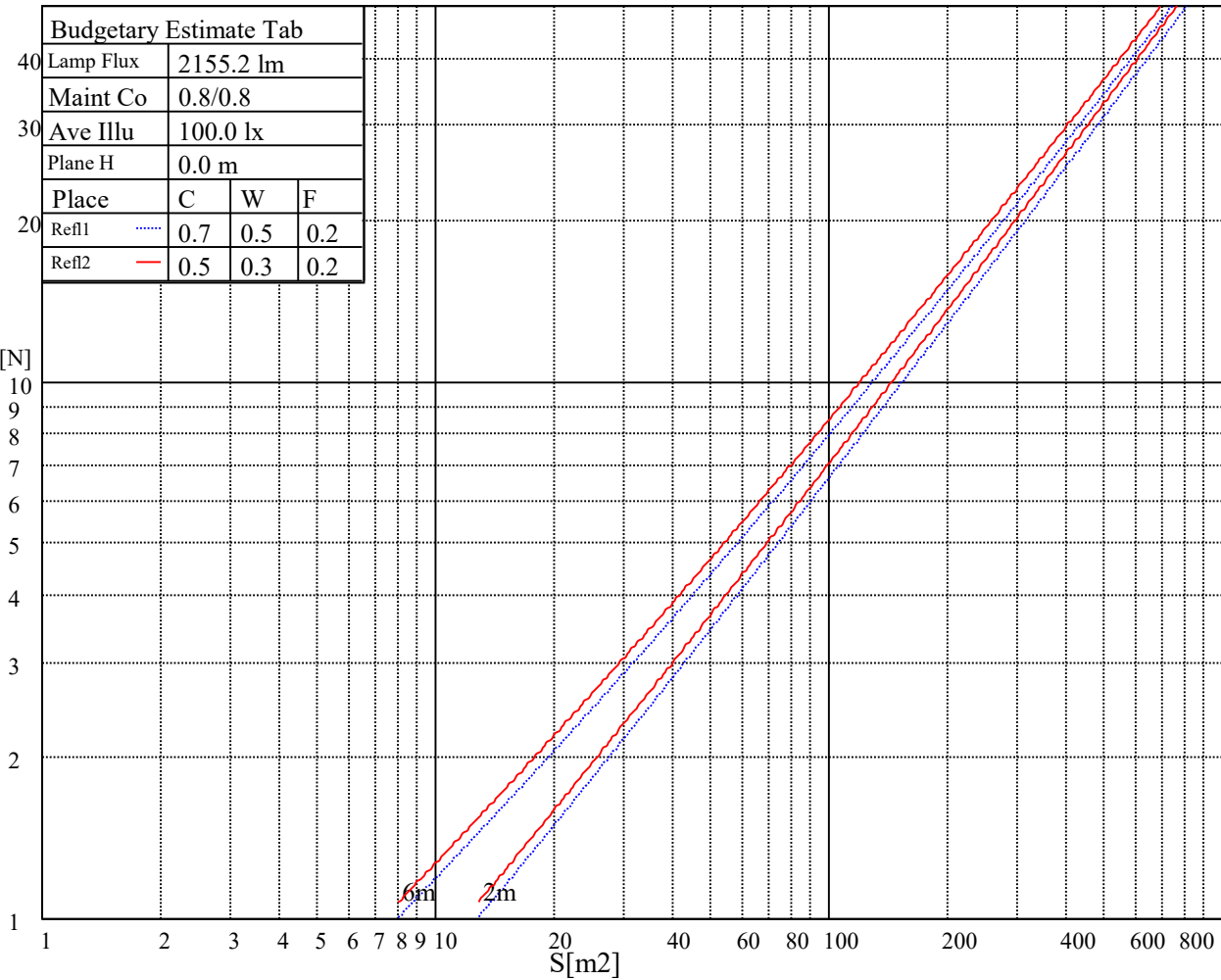
| L(Hor)(65) | L(Ver)(65) | L45(65) | L(Hor)(75) | L(Ver)(75) | L45(75) | L(Hor)(85) | L(Ver)(85) | L45(85) |
|------------|------------|---------|------------|------------|---------|------------|------------|---------|
| 8814       | 8814       | 8814    | 11315      | 11315      | 11315   | 23717      | 23717      | 23717   |

Glare Table

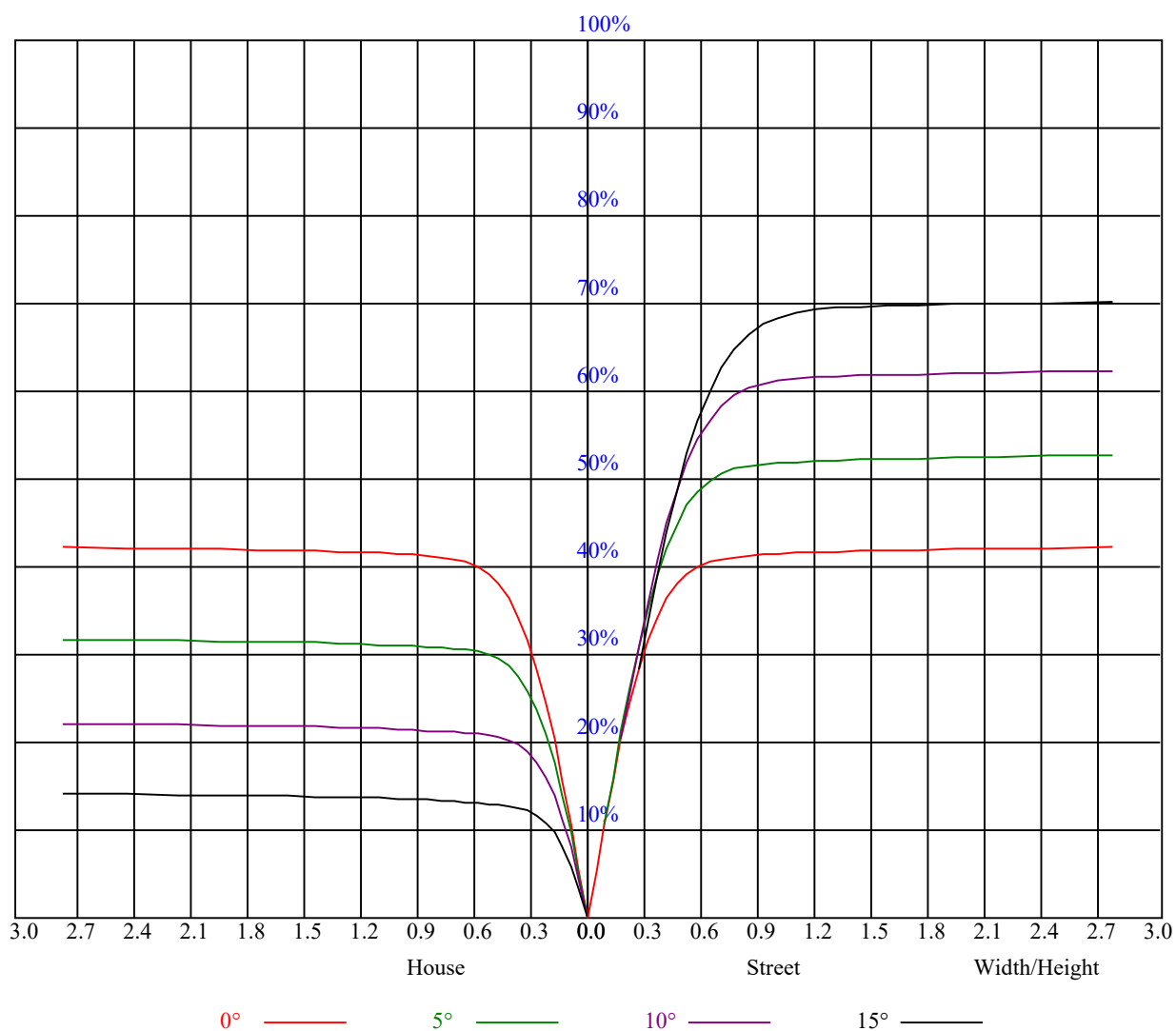
| Glare | Quality | Service Values Illuminance(lx) |      |      |            |            |            |            |            |
|-------|---------|--------------------------------|------|------|------------|------------|------------|------------|------------|
| 1.15  | A       | 2000            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

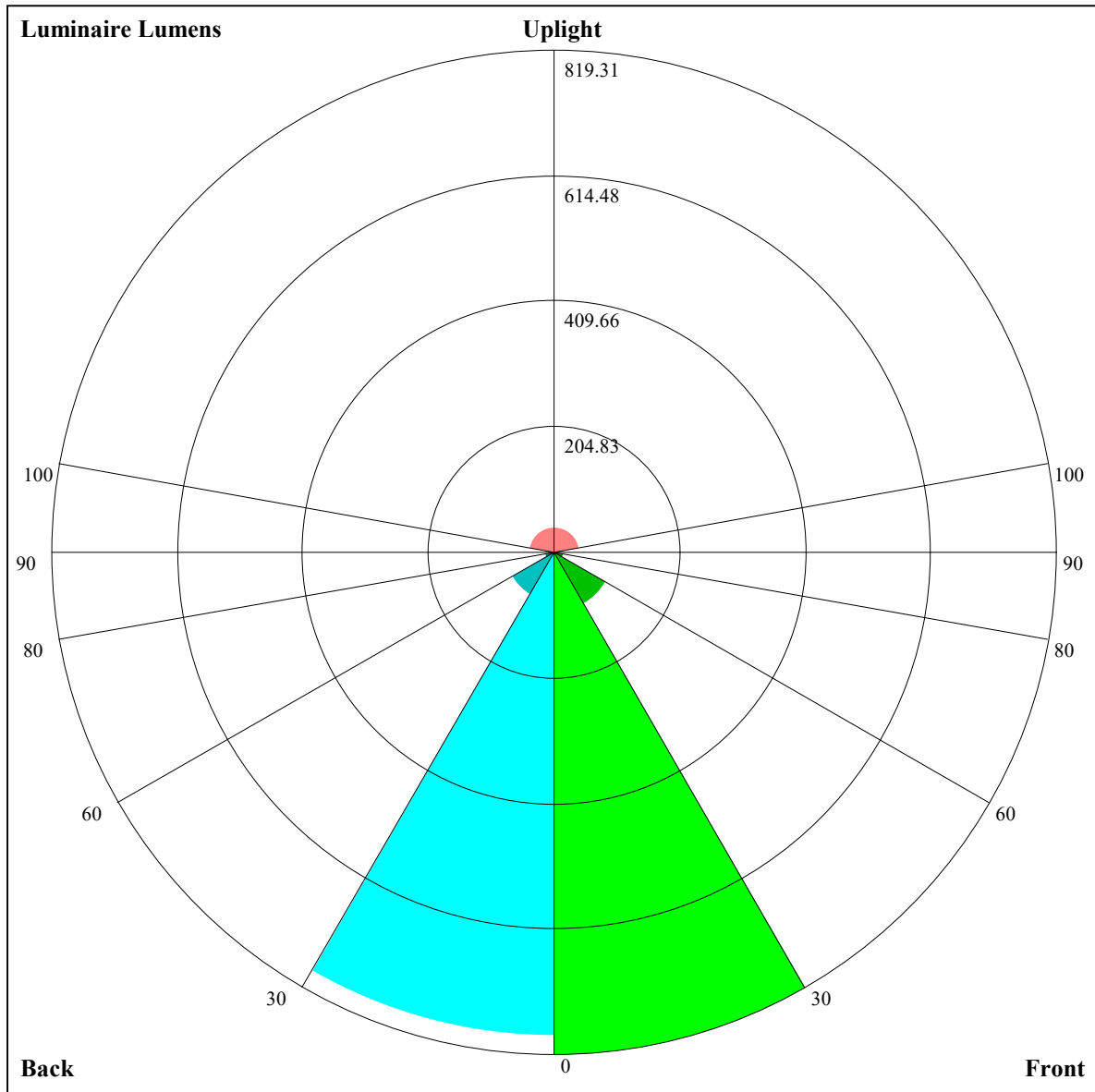
Luminance Limiting Curve





| RHOC | 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    | 1.02                                    | 1.02 | 1.02 | 1.00 | 1.00 | 1.00 | 0.95 | 0.95 | 0.95 | 0.91 | 0.91 | 0.91 | 0.88 | 0.88 | 0.88 | 0.86 |
| 1    | 0.95                                    | 0.92 | 0.90 | 0.93 | 0.91 | 0.89 | 0.89 | 0.88 | 0.86 | 0.86 | 0.85 | 0.84 | 0.83 | 0.82 | 0.81 | 0.80 |
| 2    | 0.89                                    | 0.86 | 0.84 | 0.88 | 0.85 | 0.83 | 0.85 | 0.83 | 0.81 | 0.83 | 0.81 | 0.79 | 0.80 | 0.79 | 0.77 | 0.76 |
| 3    | 0.85                                    | 0.81 | 0.78 | 0.84 | 0.80 | 0.78 | 0.82 | 0.79 | 0.76 | 0.80 | 0.77 | 0.75 | 0.78 | 0.76 | 0.74 | 0.73 |
| 4    | 0.81                                    | 0.77 | 0.74 | 0.80 | 0.76 | 0.73 | 0.78 | 0.75 | 0.73 | 0.77 | 0.74 | 0.72 | 0.75 | 0.73 | 0.71 | 0.70 |
| 5    | 0.78                                    | 0.73 | 0.70 | 0.77 | 0.73 | 0.70 | 0.75 | 0.72 | 0.69 | 0.74 | 0.71 | 0.69 | 0.73 | 0.70 | 0.68 | 0.67 |
| 6    | 0.74                                    | 0.70 | 0.67 | 0.74 | 0.70 | 0.67 | 0.73 | 0.69 | 0.67 | 0.71 | 0.68 | 0.66 | 0.70 | 0.68 | 0.66 | 0.65 |
| 7    | 0.72                                    | 0.67 | 0.64 | 0.71 | 0.67 | 0.64 | 0.70 | 0.67 | 0.64 | 0.69 | 0.66 | 0.64 | 0.68 | 0.65 | 0.63 | 0.62 |
| 8    | 0.69                                    | 0.65 | 0.62 | 0.69 | 0.65 | 0.62 | 0.68 | 0.64 | 0.62 | 0.67 | 0.64 | 0.61 | 0.66 | 0.63 | 0.61 | 0.60 |
| 9    | 0.67                                    | 0.63 | 0.60 | 0.66 | 0.62 | 0.60 | 0.66 | 0.62 | 0.60 | 0.65 | 0.62 | 0.59 | 0.64 | 0.61 | 0.59 | 0.58 |
| 10   | 0.64                                    | 0.60 | 0.58 | 0.64 | 0.60 | 0.58 | 0.63 | 0.60 | 0.58 | 0.63 | 0.60 | 0.57 | 0.62 | 0.59 | 0.57 | 0.56 |





Luminaire Lumens:

FL=819.31,FM=96.13,FH=16.22,FVH=5.45

BL=790.35,BM=80.23,BH=16.07,BVH=5.41

UL=8.88,UH=42.27

BUG Rating:B2-U2-G0

Nata 2-1795-N

| Intensity data(cd) |         |         |         |         |         |         |        |        |       | Appendix Page: 15 Total:15 |  |
|--------------------|---------|---------|---------|---------|---------|---------|--------|--------|-------|----------------------------|--|
| C/γ(°)             | 0.0     | 5.0     | 10.0    | 15.0    | 20.0    | 25.0    | 30.0   | 35.0   | 40.0  |                            |  |
| 0.0                | 3900.20 | 3804.40 | 3497.18 | 2897.62 | 2004.05 | 1286.12 | 657.92 | 287.94 | 49.77 |                            |  |
| 45.0               | 3891.39 | 3840.73 | 3556.09 | 2916.89 | 2049.75 | 1324.66 | 657.92 | 285.19 | 53.79 |                            |  |
| 90.0               | 3905.70 | 3770.81 | 3412.95 | 2723.09 | 1885.68 | 1092.87 | 525.79 | 107.80 | 43.11 |                            |  |
| 135.0              | 3902.95 | 3820.36 | 3501.59 | 2807.88 | 1988.09 | 1222.25 | 562.13 | 181.80 | 47.62 |                            |  |
| 180.0              | 3900.20 | 3745.49 | 3382.11 | 2609.12 | 1769.51 | 1066.22 | 451.02 | 90.35  | 42.39 |                            |  |
| 225.0              | 3891.39 | 3695.39 | 3317.70 | 2519.93 | 1711.70 | 1012.49 | 414.79 | 90.02  | 40.19 |                            |  |
| 270.0              | 3905.70 | 3770.81 | 3399.73 | 2689.51 | 1898.90 | 1163.89 | 540.65 | 118.10 | 46.96 |                            |  |
| 315.0              | 3902.95 | 3727.32 | 3345.78 | 2587.10 | 1784.38 | 1054.66 | 464.51 | 111.76 | 43.82 |                            |  |
| 360.0              | 3900.20 | 3804.40 | 3497.18 | 2897.62 | 2004.05 | 1286.12 | 657.92 | 287.94 | 49.77 |                            |  |
| C/γ(°)             | 45.0    | 50.0    | 55.0    | 60.0    | 65.0    | 70.0    | 75.0   | 80.0   | 85.0  |                            |  |
| 0.0                | 31.22   | 24.94   | 21.64   | 19.77   | 17.78   | 15.75   | 13.93  | 12.39  | 9.86  |                            |  |
| 45.0               | 32.43   | 26.04   | 22.52   | 20.92   | 18.77   | 16.68   | 14.87  | 12.94  | 10.57 |                            |  |
| 90.0               | 29.46   | 24.83   | 22.02   | 20.21   | 18.00   | 16.02   | 14.37  | 12.61  | 10.57 |                            |  |
| 135.0              | 30.78   | 25.71   | 22.63   | 20.54   | 18.61   | 16.63   | 14.81  | 12.77  | 10.08 |                            |  |
| 180.0              | 29.62   | 24.45   | 21.64   | 19.60   | 17.12   | 14.92   | 13.32  | 11.23  | 9.63  |                            |  |
| 225.0              | 29.51   | 24.39   | 21.47   | 19.71   | 17.23   | 15.20   | 13.49  | 11.45  | 9.63  |                            |  |
| 270.0              | 29.68   | 24.45   | 21.64   | 19.21   | 17.29   | 15.42   | 13.32  | 11.40  | 9.19  |                            |  |
| 315.0              | 28.68   | 23.89   | 21.09   | 19.43   | 17.07   | 15.36   | 13.43  | 11.23  | 9.19  |                            |  |
| 360.0              | 31.22   | 24.94   | 21.64   | 19.77   | 17.78   | 15.75   | 13.93  | 12.39  | 9.86  |                            |  |
| C/γ(°)             | 90.0    |         |         |         |         |         |        |        |       |                            |  |
| 0.0                | 8.09    |         |         |         |         |         |        |        |       |                            |  |
| 45.0               | 8.09    |         |         |         |         |         |        |        |       |                            |  |
| 90.0               | 8.26    |         |         |         |         |         |        |        |       |                            |  |
| 135.0              | 8.09    |         |         |         |         |         |        |        |       |                            |  |
| 180.0              | 8.26    |         |         |         |         |         |        |        |       |                            |  |
| 225.0              | 8.09    |         |         |         |         |         |        |        |       |                            |  |
| 270.0              | 8.09    |         |         |         |         |         |        |        |       |                            |  |
| 315.0              | 8.15    |         |         |         |         |         |        |        |       |                            |  |
| 360.0              | 8.09    |         |         |         |         |         |        |        |       |                            |  |