



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: 1681-S

Luminaire: 92.70.124.00

Report No: nt0100

Test No: GC2020011601

LampCAT: LUMINUS CXM-9-AC40

Lamp flux(lm): 1387.0

Number of Lamps: 1

Length(mm): 0

Phm Type: C

Voltage(V): 34.8400

Current(A): 0.3970

Power (W): 13.8300

PF: 0.0000

Ballast type: DC

Width(mm): 0

Height(mm): 0

---

## Photometric Results

---

Lumens(lm): 1193.37, Efficiency(%): 86.04% , Luminous Efficacy(lm/W): 86.29

Central intensity(cd): 1397.109, Maximum intensity(cd): 1397.109

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

Beam Angle(50%Imax): [C0/180]Total=59.0

[C90/270]Total=59.0

Field angle(10%Imax): [C0/180]Total=78.0

[C90/270]Total=78.0

Maximum s/h(1/2): C0\_180=0.93 C90\_270=0.93

Maximum s/h(1/4): C0\_180=0.88 C90\_270=0.88

Up flux rate of lamp(%): 0.00%

Down flux rate of lamp(%): 86.04%

Up flux rate of LUM(%): - -

Down flux rate of LUM(%): 100.00%

CIE Type : Direct lighting

Output flux ratio in  $\pi$  solid angle : 97.960%

---

Equipment: GMS1980  
Temperature(°C): 25.0

Date: 2020/1/16  
Humidity(%): 65.0%

Operator: NT07  
Distance(m): 7.50

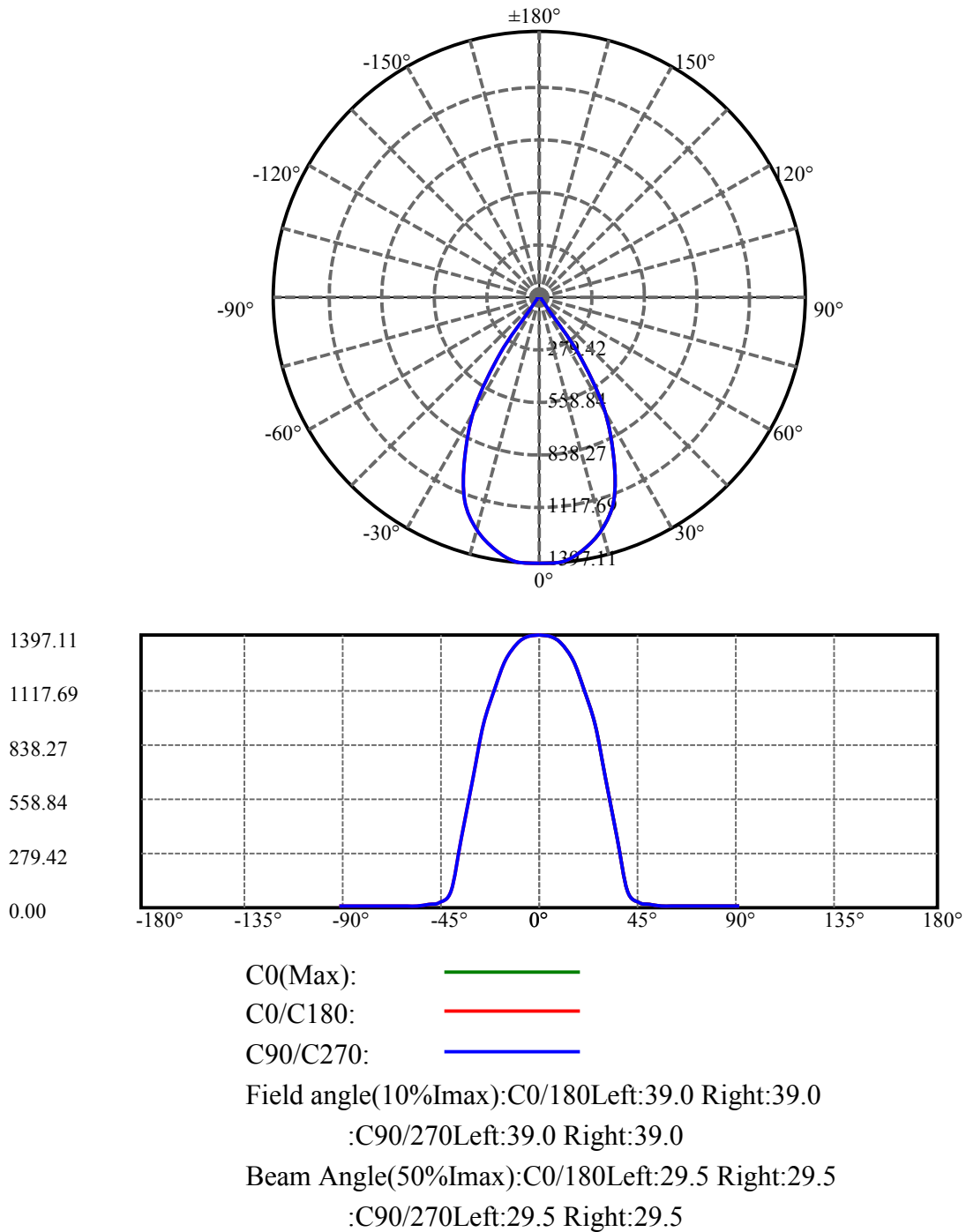
| $\gamma(^{\circ})$ | Average I(cd) | Zonal F(lm) | Sum F(lm) | Eff Flux(%) | Eff Sum(%) |
|--------------------|---------------|-------------|-----------|-------------|------------|
| 0.0                | 1397.109      | 0.000       | 0         | .000%       | .000%      |
| 5.0                | 1389.656      | 33.315      | 33.315    | 2.402%      | 2.792%     |
| 10.0               | 1350.422      | 98.021      | 131.336   | 7.067%      | 11.005%    |
| 15.0               | 1264.219      | 155.099     | 286.435   | 11.182%     | 24.002%    |
| 20.0               | 1132.291      | 197.506     | 483.941   | 14.240%     | 40.552%    |
| 25.0               | 936.710       | 217.000     | 700.941   | 15.645%     | 58.736%    |
| 30.0               | 670.092       | 203.342     | 904.283   | 14.661%     | 75.776%    |
| 35.0               | 354.009       | 150.806     | 1055.089  | 10.873%     | 88.413%    |
| 40.0               | 87.434        | 73.651      | 1128.741  | 5.310%      | 94.584%    |
| 45.0               | 27.183        | 21.222      | 1149.963  | 1.530%      | 96.363%    |
| 50.0               | 15.075        | 8.539       | 1158.502  | .616%       | 97.078%    |
| 55.0               | 11.145        | 5.701       | 1164.203  | .411%       | 97.556%    |
| 60.0               | 9.703         | 4.819       | 1169.022  | .347%       | 97.960%    |
| 65.0               | 9.239         | 4.605       | 1173.627  | .332%       | 98.346%    |
| 70.0               | 8.852         | 4.581       | 1178.207  | .330%       | 98.729%    |
| 75.0               | 7.889         | 4.376       | 1182.583  | .315%       | 99.096%    |
| 80.0               | 7.130         | 4.019       | 1186.602  | .290%       | 99.433%    |
| 85.0               | 6.124         | 3.601       | 1190.203  | .260%       | 99.735%    |
| 90.0               | 5.442         | 3.167       | 1193.37   | .228%       | 100.000%   |

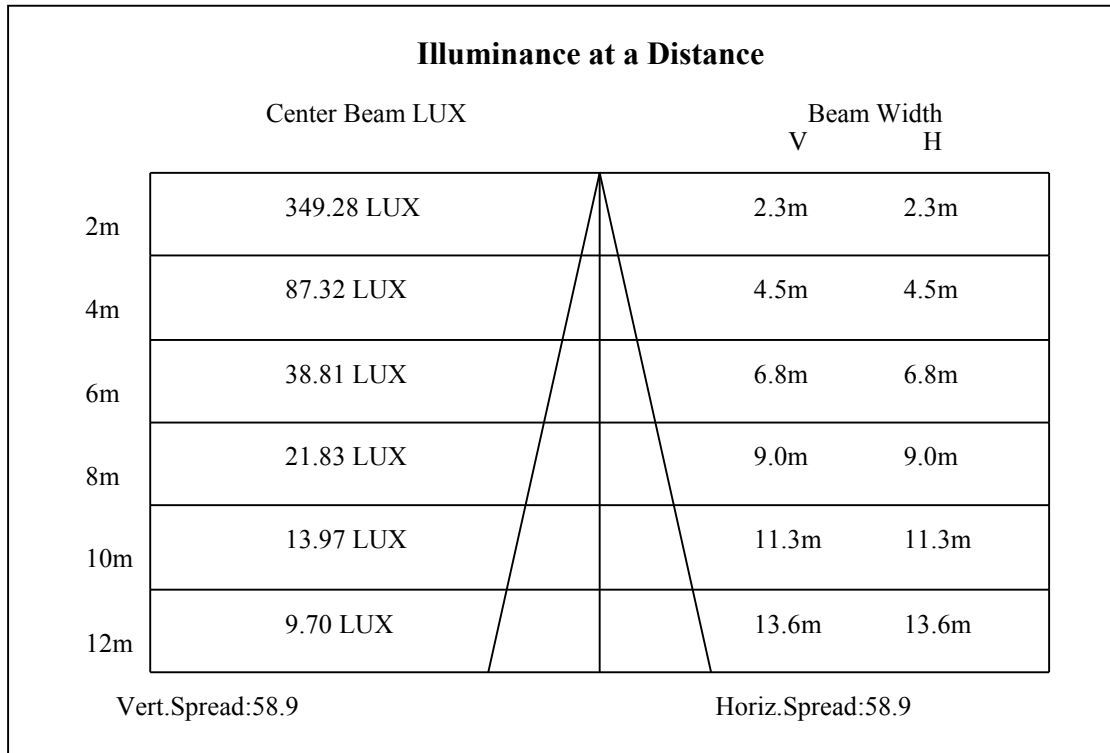
## ZONAL LUMEN SUMMARY

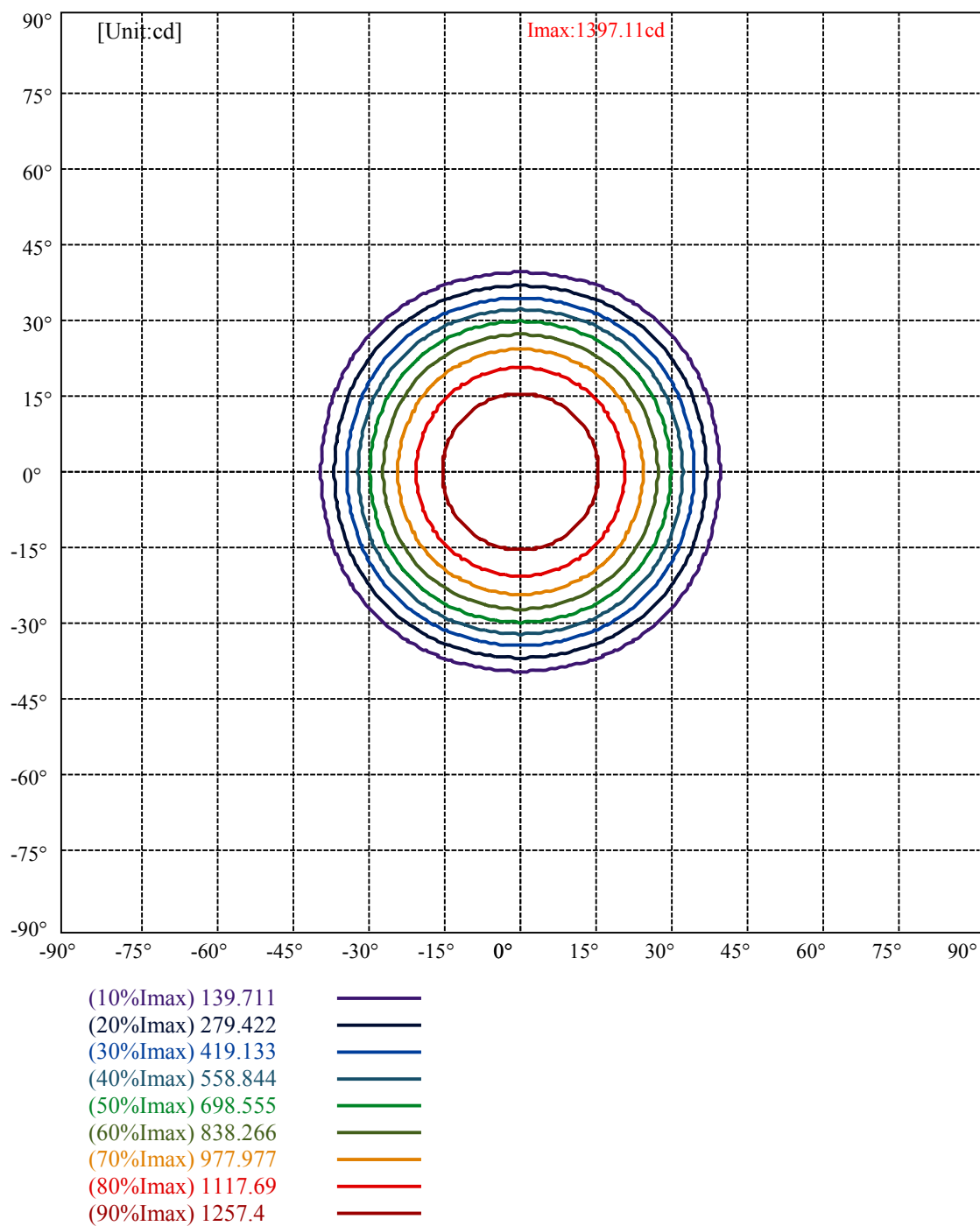
| Zone    | Lumens  | %Lamp  | %Fixt   |
|---------|---------|--------|---------|
| 0-30    | 904.28  | 65.20% | 75.78%  |
| 0-40    | 1128.74 | 81.38% | 94.58%  |
| 0-60    | 1169.02 | 84.28% | 97.96%  |
| 0-90    | 1190.20 | 85.81% | 99.73%  |
| 0-120   | 1190.20 | 85.81% | 99.73%  |
| 0-180   | 1193.37 | 86.04% | 100.00% |
| 60-90   | 26.00   | 1.87%  | 2.18%   |
| 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%   |
| 0-31.67 | 954.70  | 68.83% | 80.00%  |

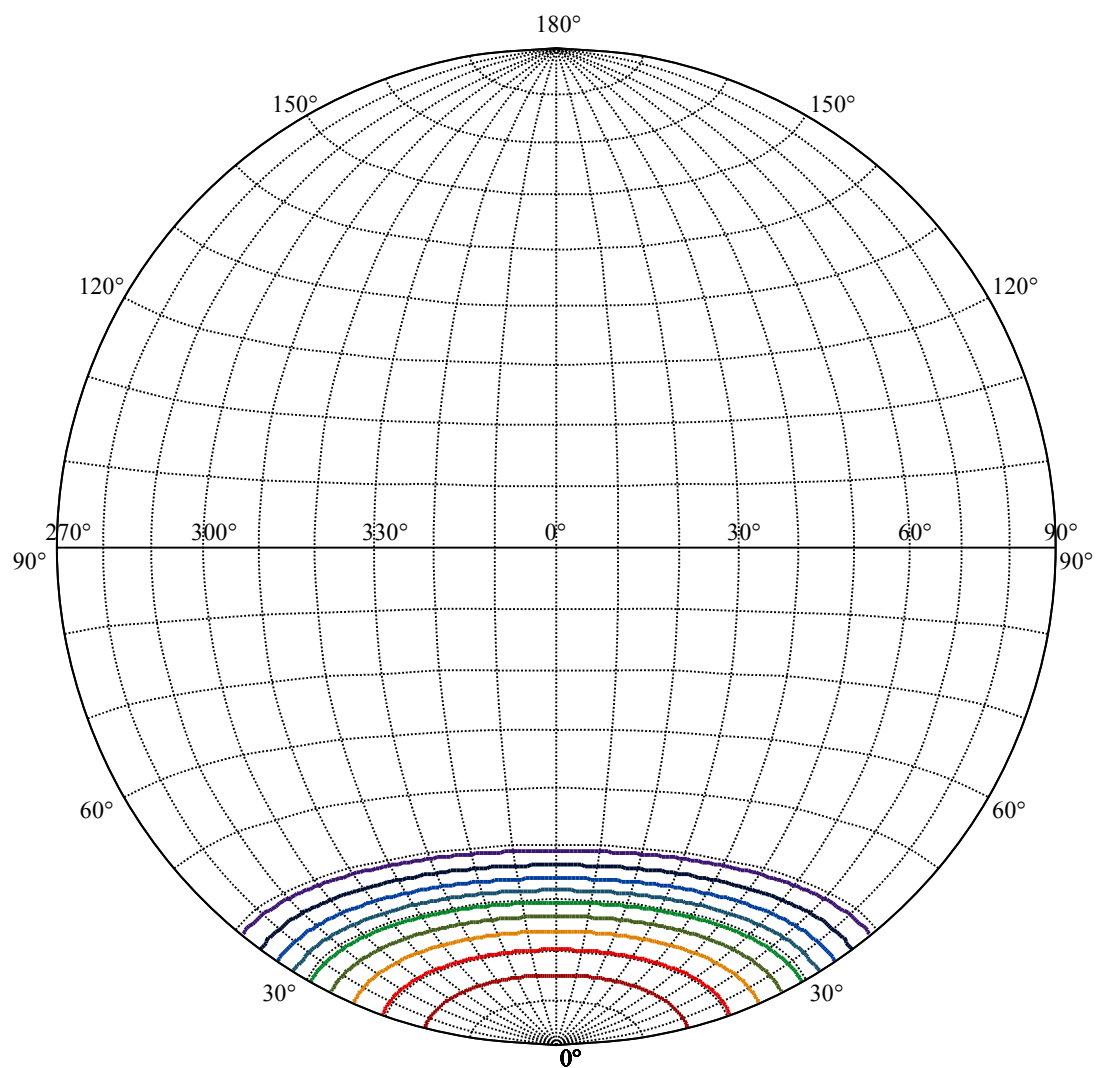
## ZONAL LUMEN SUMMARY

|         |        |
|---------|--------|
| 0-10    | 131.34 |
| 10-20   | 352.60 |
| 20-30   | 420.34 |
| 30-40   | 224.46 |
| 40-50   | 29.76  |
| 50-60   | 10.52  |
| 60-70   | 9.19   |
| 70-80   | 8.39   |
| 80-90   | 3.60   |
| 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   |









House

[Unit:cd]

Road

**Imax:1397.11**

(10%Imax) 139.711

(20%Imax) 279.422

(30%Imax) 419.133

(40%Imax) 558.844

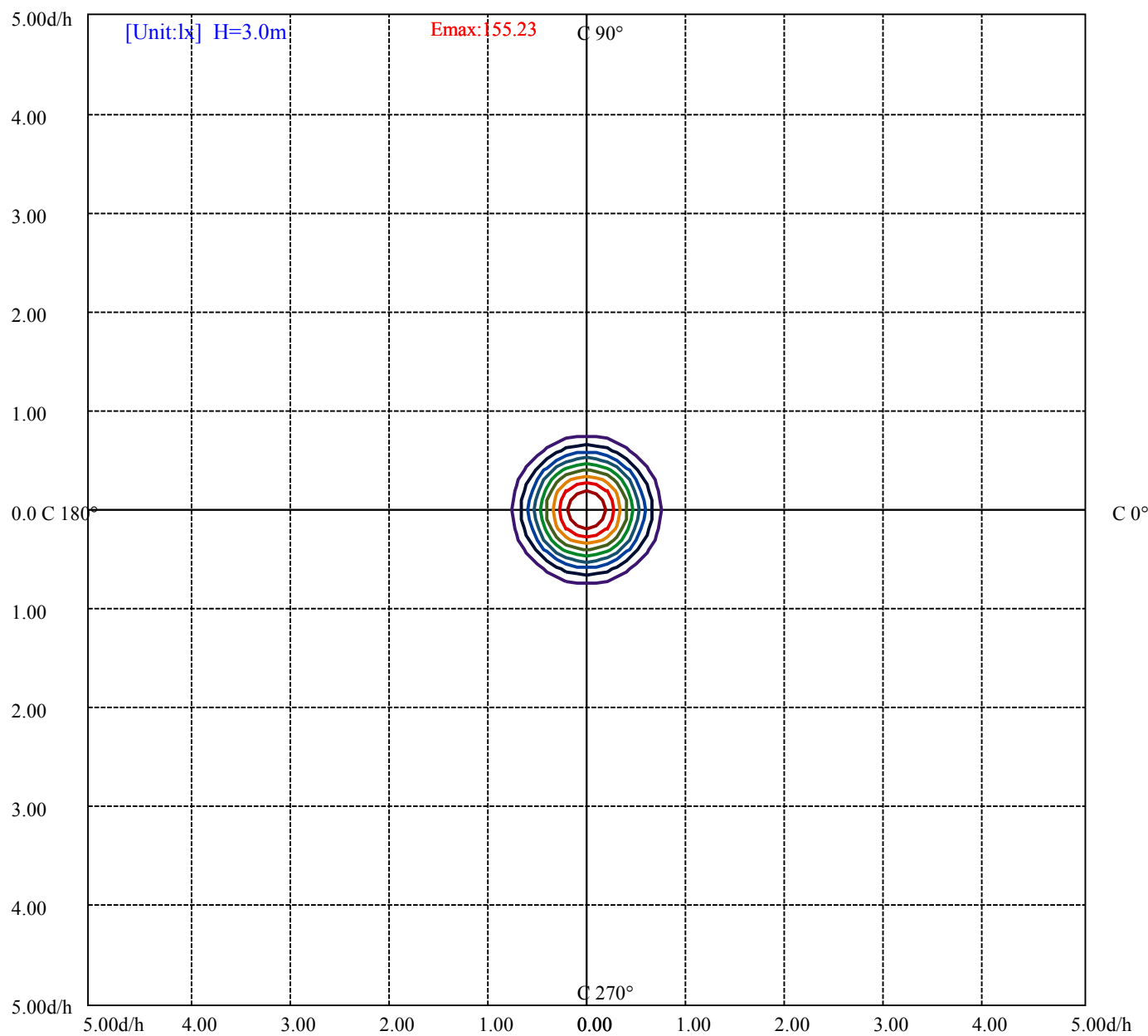
(50%Imax) 698.555

(60%Imax) 838.266

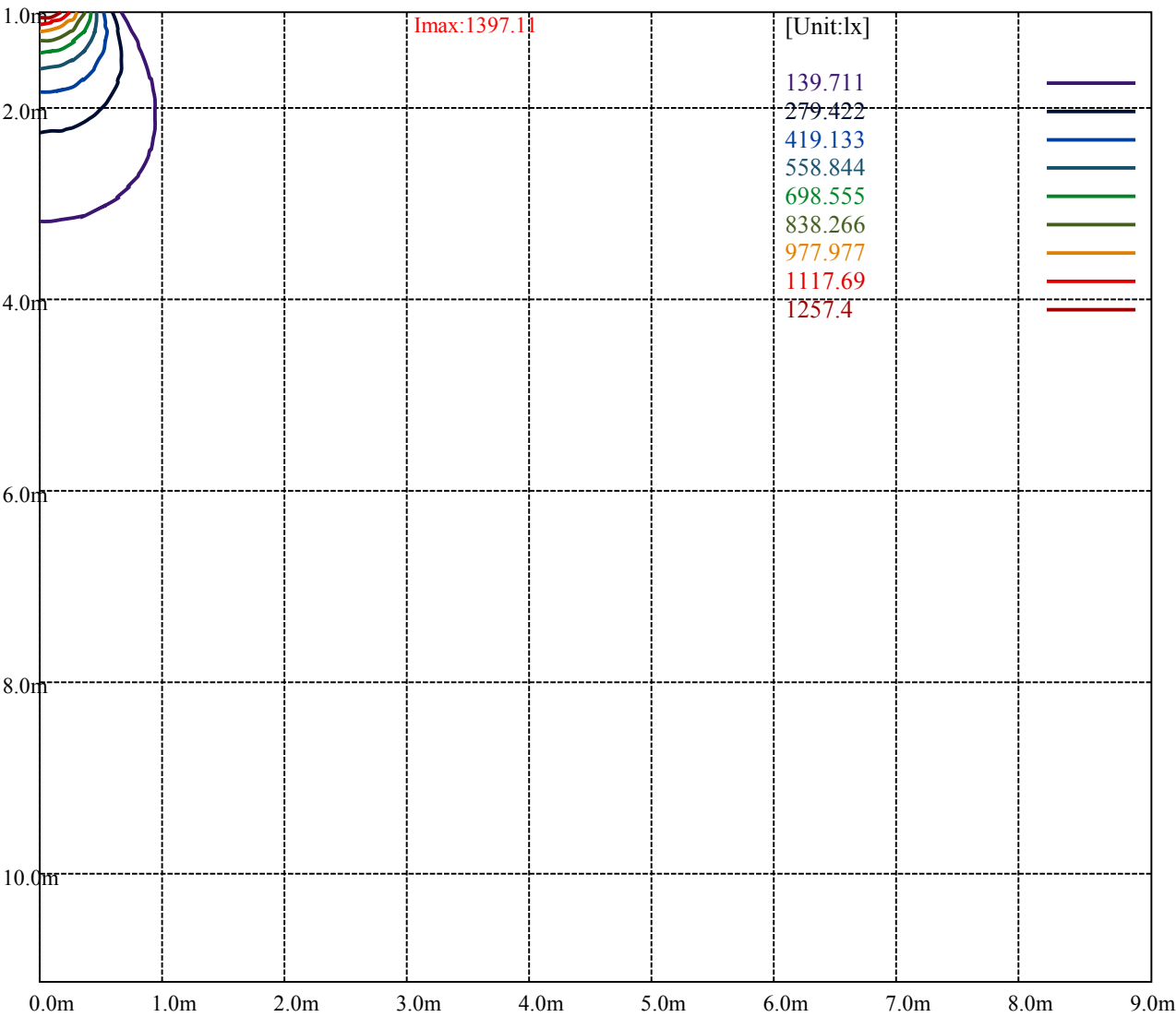
(70%Imax) 977.977

(80%Imax) 1117.69

(90%Imax) 1257.4



|                                 |   |
|---------------------------------|---|
| (10%E <sub>max</sub> ) 15.52344 | — |
| (20%E <sub>max</sub> ) 31.04689 | — |
| (30%E <sub>max</sub> ) 46.57033 | — |
| (40%E <sub>max</sub> ) 62.09378 | — |
| (50%E <sub>max</sub> ) 77.61722 | — |
| (60%E <sub>max</sub> ) 93.14056 | — |
| (70%E <sub>max</sub> ) 108.664  | — |
| (80%E <sub>max</sub> ) 124.1878 | — |
| (90%E <sub>max</sub> ) 139.7111 | — |



Luminance Table

| $\gamma$ | 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  |

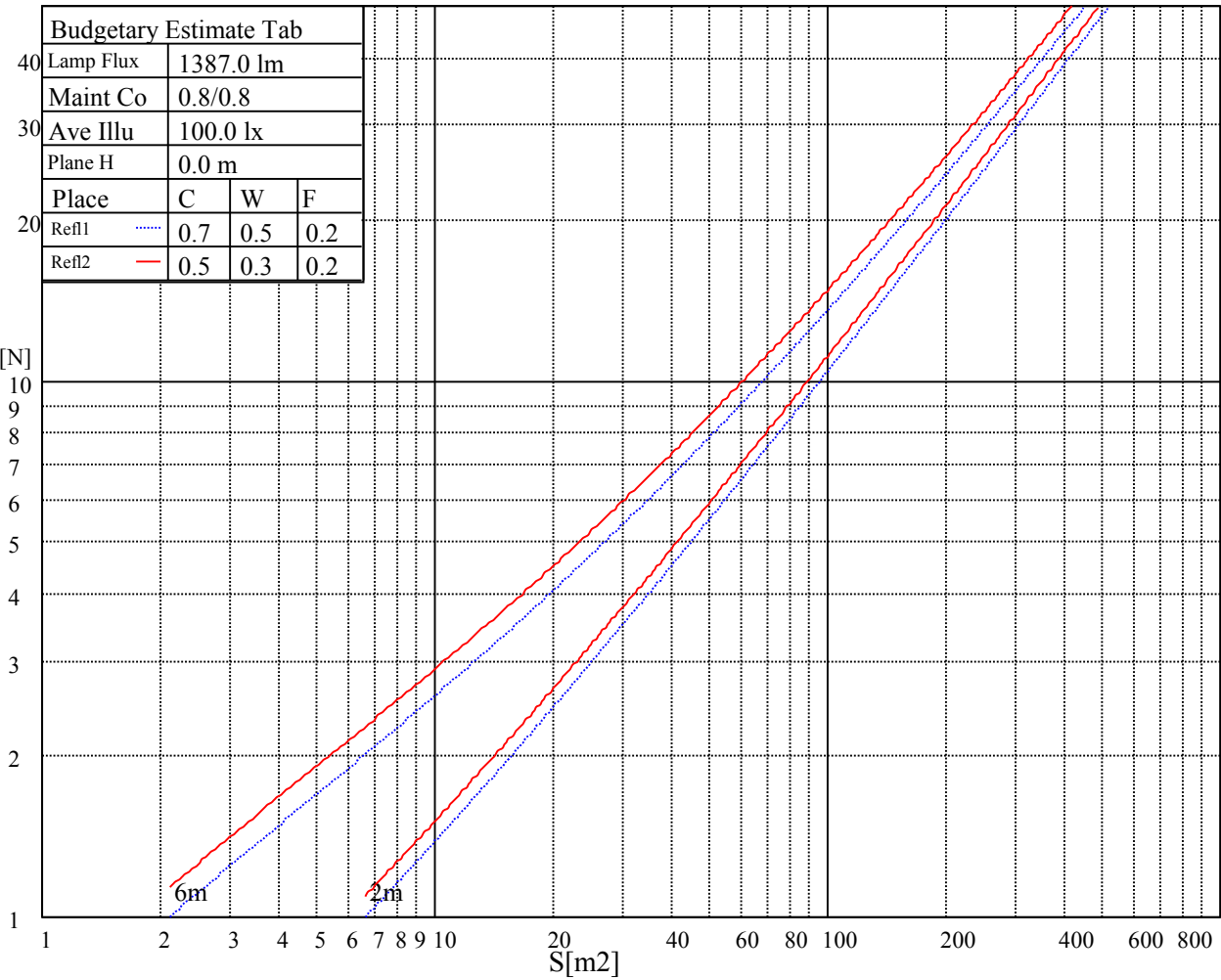
| L(Hor)(65) | L(Ver)(65) | L45(65) | L(Hor)(75) | L(Ver)(75) | L45(75) | L(Hor)(85) | L(Ver)(85) | L45(85) |
|------------|------------|---------|------------|------------|---------|------------|------------|---------|
| 0          | 0          | 0       | 0          | 0          | 0       | 0     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

Glare Table

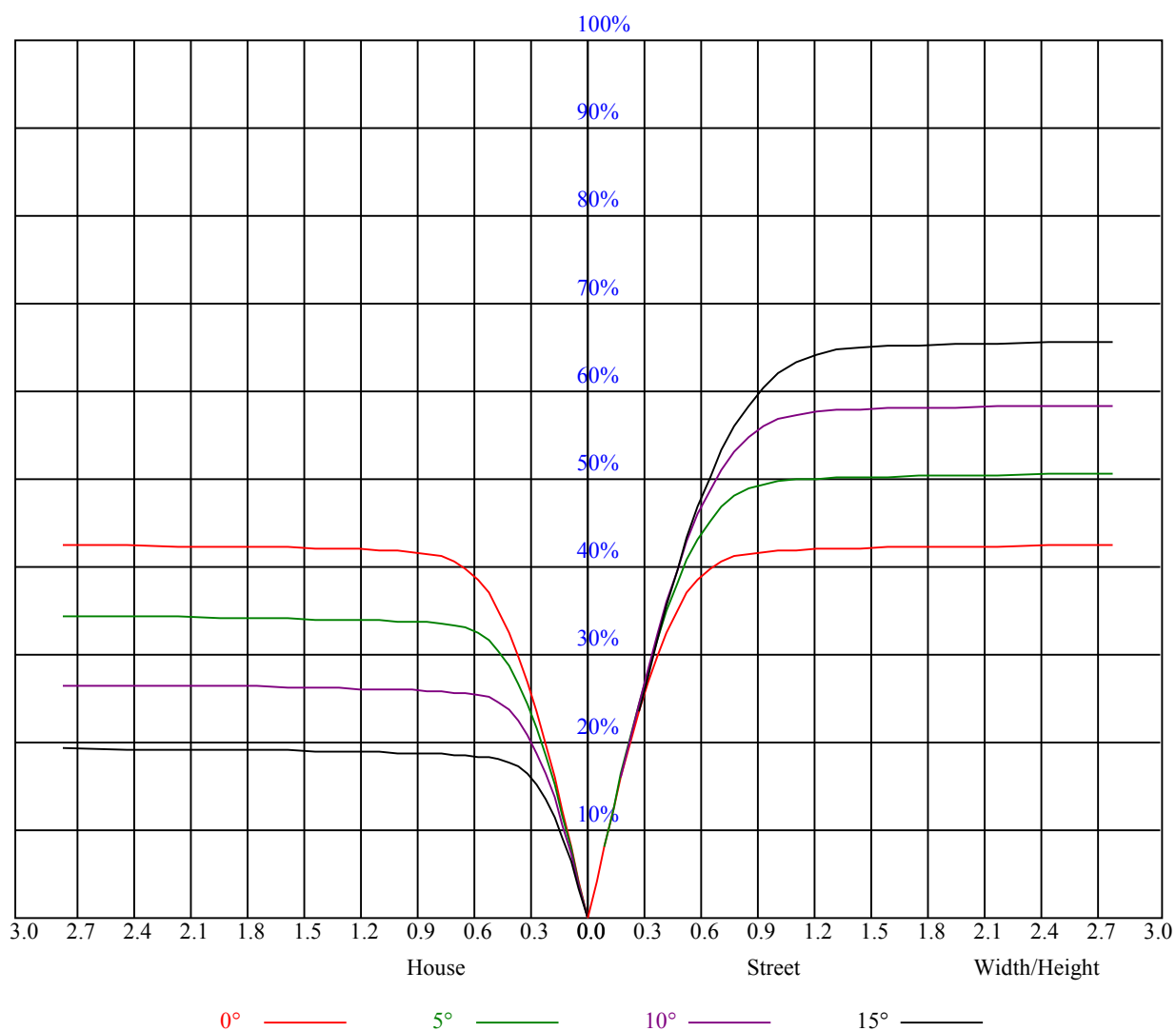
| Glare | Quality | Service Values Illuminance(lx) |      |      |            |            |            |            |            |
|-------|---------|--------------------------------|------|------|------------|------------|------------|------------|------------|
| 1.15  | A       | 2000                           | 1000 | 500  | $\leq 300$ |            |            |            |            |
| 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          |

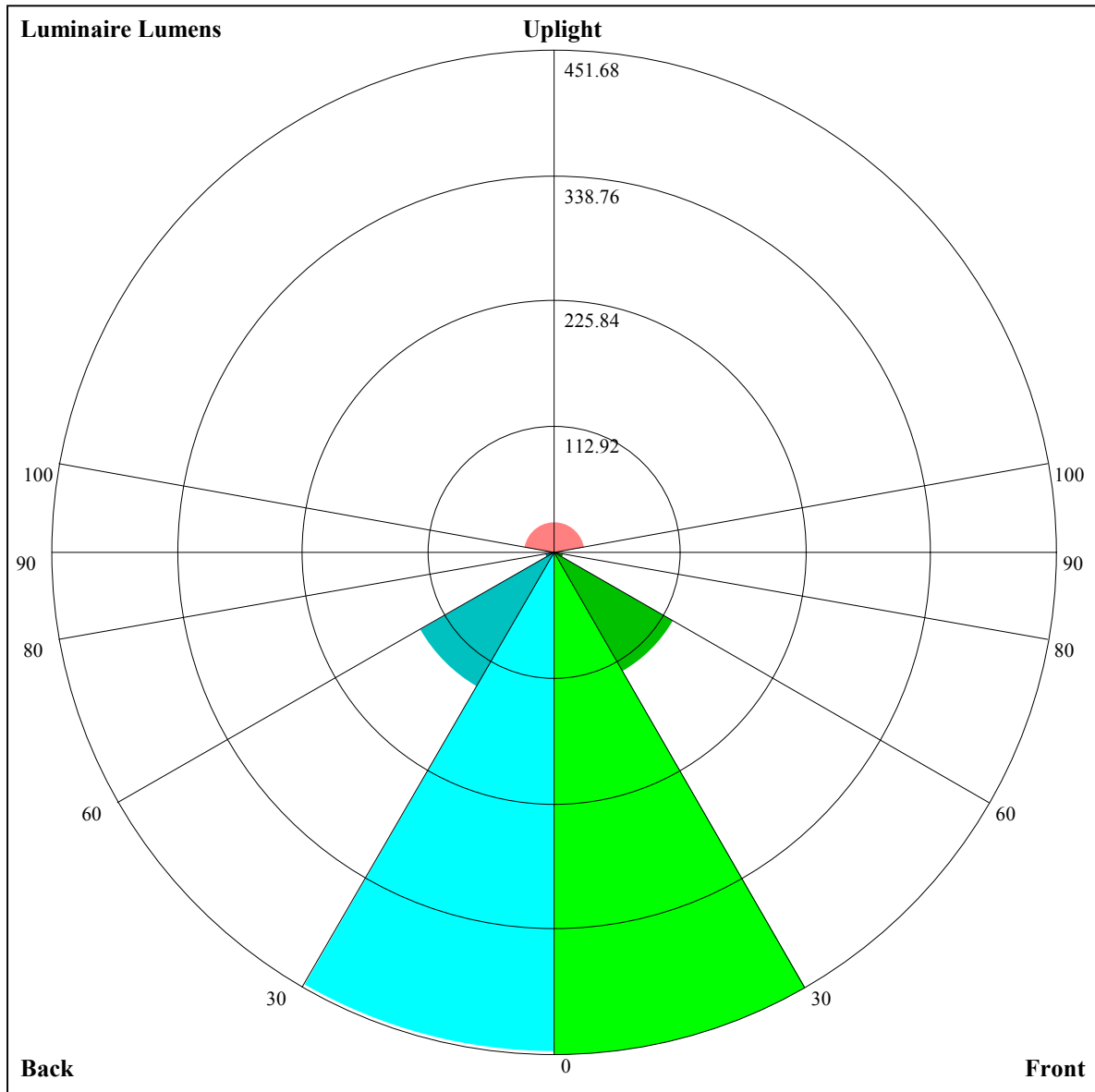
Luminance Limiting Curve





| 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 | 0.96 | 0.96 | 0.96 | 0.92 | 0.92 | 0.92 | 0.88 | 0.88 | 0.88 | 0.86 |
| 1    | 0.95                                    | 0.93 | 0.91 | 0.93 | 0.91 | 0.89 | 0.90 | 0.88 | 0.87 | 0.87 | 0.85 | 0.84 | 0.84 | 0.83 | 0.82 | 0.80 |
| 2    | 0.89                                    | 0.85 | 0.82 | 0.87 | 0.84 | 0.81 | 0.84 | 0.82 | 0.79 | 0.82 | 0.80 | 0.78 | 0.79 | 0.78 | 0.76 | 0.75 |
| 3    | 0.83                                    | 0.78 | 0.75 | 0.82 | 0.78 | 0.74 | 0.79 | 0.76 | 0.73 | 0.77 | 0.74 | 0.72 | 0.75 | 0.73 | 0.71 | 0.70 |
| 4    | 0.78                                    | 0.73 | 0.69 | 0.77 | 0.72 | 0.69 | 0.75 | 0.71 | 0.68 | 0.73 | 0.70 | 0.67 | 0.71 | 0.69 | 0.66 | 0.65 |
| 5    | 0.73                                    | 0.68 | 0.64 | 0.72 | 0.67 | 0.64 | 0.70 | 0.66 | 0.63 | 0.69 | 0.66 | 0.63 | 0.68 | 0.65 | 0.62 | 0.61 |
| 6    | 0.69                                    | 0.63 | 0.60 | 0.68 | 0.63 | 0.60 | 0.67 | 0.62 | 0.59 | 0.65 | 0.62 | 0.59 | 0.64 | 0.61 | 0.58 | 0.57 |
| 7    | 0.65                                    | 0.60 | 0.56 | 0.64 | 0.59 | 0.56 | 0.63 | 0.59 | 0.56 | 0.62 | 0.58 | 0.55 | 0.61 | 0.58 | 0.55 | 0.54 |
| 8    | 0.61                                    | 0.56 | 0.53 | 0.61 | 0.56 | 0.52 | 0.60 | 0.55 | 0.52 | 0.59 | 0.55 | 0.52 | 0.58 | 0.54 | 0.52 | 0.51 |
| 9    | 0.58                                    | 0.53 | 0.49 | 0.57 | 0.53 | 0.49 | 0.57 | 0.52 | 0.49 | 0.56 | 0.52 | 0.49 | 0.55 | 0.52 | 0.49 | 0.48 |
| 10   | 0.55                                    | 0.50 | 0.47 | 0.54 | 0.50 | 0.47 | 0.54 | 0.49 | 0.46 | 0.53 | 0.49 | 0.46 | 0.52 | 0.49 | 0.46 | 0.45 |





Luminaire Lumens:

FL=451.68,FM=123.09,FH=8.86,FVH=3.36

BL=449.77,BM=140.05,BH=8.54,BVH=3.37

UL=5.94,UH=28.26

BUG Rating:B1-U2-G0

## NATA 1681-S

| Intensity data(cd)         |         |         |         |         |         |        |        |        |        |
|----------------------------|---------|---------|---------|---------|---------|--------|--------|--------|--------|
| Appendix Page: 15 Total:15 |         |         |         |         |         |        |        |        |        |
| C/ $\gamma$ (°)            | 0.0     | 5.0     | 10.0    | 15.0    | 20.0    | 25.0   | 30.0   | 35.0   | 40.0   |
| 0.0                        | 1394.44 | 1397.25 | 1373.63 | 1303.88 | 1189.69 | 964.69 | 656.44 | 317.81 | 64.29  |
| 45.0                       | 1399.50 | 1401.75 | 1388.25 | 1308.38 | 1158.75 | 919.69 | 624.94 | 336.38 | 83.08  |
| 90.0                       | 1403.44 | 1400.63 | 1344.94 | 1230.19 | 1117.13 | 919.07 | 669.26 | 324.73 | 76.67  |
| 135.0                      | 1391.06 | 1389.94 | 1340.44 | 1262.25 | 1152.56 | 995.06 | 765.00 | 449.44 | 123.13 |
| 180.0                      | 1394.44 | 1378.69 | 1335.38 | 1270.69 | 1118.25 | 960.19 | 698.34 | 405.62 | 107.94 |
| 225.0                      | 1399.50 | 1385.44 | 1351.13 | 1261.13 | 1072.35 | 837.00 | 597.09 | 345.77 | 96.19  |
| 270.0                      | 1403.44 | 1384.31 | 1335.94 | 1239.75 | 1135.69 | 984.38 | 724.50 | 397.69 | 89.89  |
| 315.0                      | 1391.06 | 1379.25 | 1333.69 | 1237.50 | 1113.92 | 913.61 | 625.16 | 254.64 | 58.28  |
| 360.0                      | 1394.44 | 1397.25 | 1373.63 | 1303.88 | 1189.69 | 964.69 | 656.44 | 317.81 | 64.29  |
| C/ $\gamma$ (°)            | 45.0    | 50.0    | 55.0    | 60.0    | 65.0    | 70.0   | 75.0   | 80.0   | 85.0   |
| 0.0                        | 22.11   | 13.44   | 10.58   | 9.28    | 9.23    | 8.72   | 7.09   | 6.41   | 6.19   |
| 45.0                       | 25.82   | 15.47   | 12.09   | 11.25   | 11.19   | 11.53  | 11.08  | 8.78   | 6.36   |
| 90.0                       | 23.79   | 13.16   | 10.41   | 8.94    | 8.21    | 7.88   | 6.81   | 6.30   | 5.85   |
| 135.0                      | 32.51   | 15.53   | 10.80   | 9.11    | 7.93    | 7.65   | 6.58   | 6.24   | 5.91   |
| 180.0                      | 32.40   | 16.71   | 11.53   | 9.39    | 8.21    | 7.88   | 6.64   | 6.30   | 6.02   |
| 225.0                      | 29.98   | 16.54   | 12.09   | 10.80   | 10.69   | 10.58  | 10.18  | 9.23   | 6.41   |
| 270.0                      | 28.86   | 16.31   | 11.42   | 9.73    | 9.11    | 9.06   | 8.10   | 7.31   | 6.08   |
| 315.0                      | 21.99   | 13.44   | 10.24   | 9.11    | 9.34    | 7.54   | 6.64   | 6.47   | 6.19   |
| 360.0                      | 22.11   | 13.44   | 10.58   | 9.28    | 9.23    | 8.72   | 7.09   | 6.41   | 6.19   |
| C/ $\gamma$ (°)            | 90.0    |         |         |         |         |        |        |        |        |
| 0.0                        | 5.40    |         |         |         |         |        |        |        |        |
| 45.0                       | 5.34    |         |         |         |         |        |        |        |        |
| 90.0                       | 5.40    |         |         |         |         |        |        |        |        |
| 135.0                      | 5.57    |         |         |         |         |        |        |        |        |
| 180.0                      | 5.68    |         |         |         |         |        |        |        |        |
| 225.0                      | 5.51    |         |         |         |         |        |        |        |        |
| 270.0                      | 5.34    |         |         |         |         |        |        |        |        |
| 315.0                      | 5.29    |         |         |         |         |        |        |        |        |
| 360.0                      | 5.40    |         |         |         |         |        |        |        |        |