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亮明

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Client:

LumCAT: CES1112LAJUDPC

Luminaire: LED LAMP

Report No:

Ballast type:

Test No:

Voltage(V): 119.970

LampCAT:

Current(A): 0.162

Lamp flux(lm): 1507.0

Power (W): 19.150

Number of Lamps: 1

PF: 0.985

Length(mm): 270

Width(mm): 70

Phm Type: C

Height(mm): 280

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Photometric Results

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Lumens(lm): 1507.01, Efficiency(%): 100.00% , Luminous Efficacy(lm/W): 78.69

Central intensity(cd): 11.118, Maximum intensity(cd): 312.221

Angle of maximum intensity: C=90.0  $\gamma$ =90.0

Beam Angle(50%Imax): [C0/180]Total=332.4

[C90/270]Total=153.8

Field angle(10%Imax): [C0/180]Total=355.4

[C90/270]Total=340.2

Maximum s/h(1/2): C0\_180=3.88 C90\_270=138.86

Maximum s/h(1/4): C0\_180=3.63 C90\_270=4.97

Up flux rate of lamp(%): 49.47%

Down flux rate of lamp(%): 50.53%

Up flux rate of LUM(%): 49.47%

Down flux rate of LUM(%): 50.53%

CIE Type : General diffuse lighting

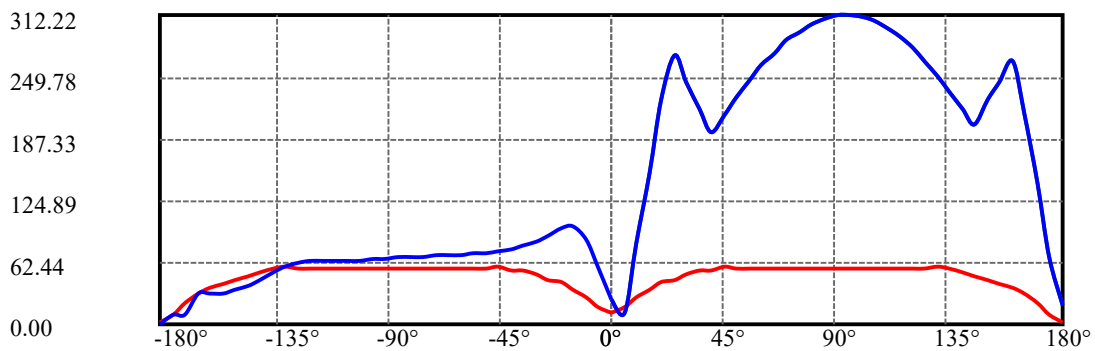
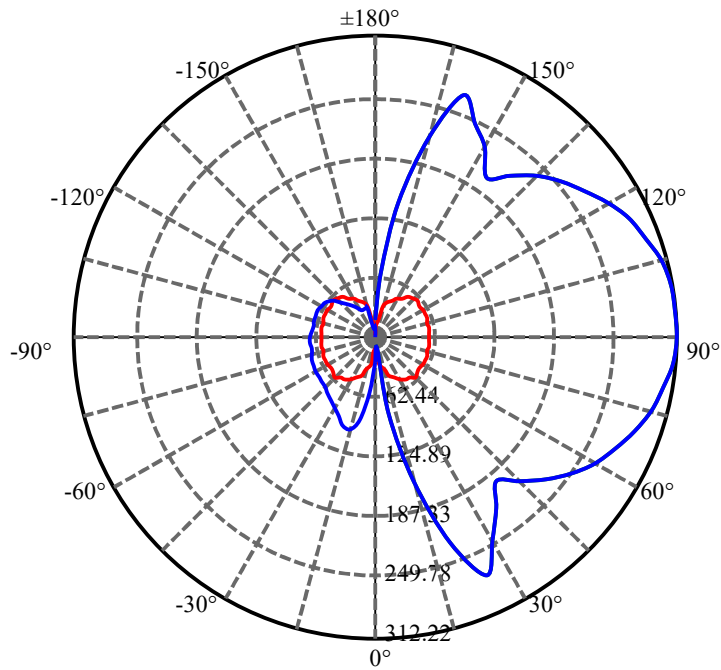
Output flux ratio in  $\pi$  solid angle : 23.526%

| $\gamma(^{\circ})$ | Average I(cd) | Zonal F(lm) | Sum F(lm) | Eff Flux(%) | Eff Sum(%) |
|--------------------|---------------|-------------|-----------|-------------|------------|
| 0.0                | 17.835        | 0.000       | 0         | 0.00%       | 0.00%      |
| 5.0                | 26.983        | 0.536       | 0.536     | 0.04%       | 0.04%      |
| 10.0               | 56.476        | 2.986       | 3.521     | 0.20%       | 0.23%      |
| 15.0               | 84.270        | 8.349       | 11.87     | 0.55%       | 0.79%      |
| 20.0               | 109.362       | 15.958      | 27.828    | 1.06%       | 1.85%      |
| 25.0               | 125.383       | 24.620      | 52.449    | 1.63%       | 3.48%      |
| 30.0               | 127.197       | 31.964      | 84.413    | 2.12%       | 5.60%      |
| 35.0               | 122.680       | 36.796      | 121.209   | 2.44%       | 8.04%      |
| 40.0               | 115.539       | 39.745      | 160.954   | 2.64%       | 10.68%     |
| 45.0               | 113.609       | 42.428      | 203.383   | 2.82%       | 13.50%     |
| 50.0               | 114.188       | 46.030      | 249.412   | 3.05%       | 16.55%     |
| 55.0               | 116.813       | 50.227      | 299.639   | 3.33%       | 19.88%     |
| 60.0               | 120.712       | 54.903      | 354.542   | 3.64%       | 23.53%     |
| 65.0               | 124.340       | 59.573      | 414.115   | 3.95%       | 27.48%     |
| 70.0               | 127.699       | 63.818      | 477.933   | 4.23%       | 31.71%     |
| 75.0               | 130.247       | 67.423      | 545.356   | 4.47%       | 36.19%     |
| 80.0               | 132.408       | 70.279      | 615.635   | 4.66%       | 40.85%     |
| 85.0               | 133.914       | 72.366      | 688.001   | 4.80%       | 45.65%     |
| 90.0               | 134.647       | 73.534      | 761.535   | 4.88%       | 50.53%     |
| 95.0               | 134.570       | 73.714      | 835.249   | 4.89%       | 55.42%     |
| 100.0              | 133.644       | 72.880      | 908.129   | 4.84%       | 60.26%     |
| 105.0              | 132.370       | 71.178      | 979.306   | 4.72%       | 64.98%     |
| 110.0              | 130.247       | 68.644      | 1047.95   | 4.55%       | 69.54%     |
| 115.0              | 127.506       | 65.265      | 1113.215  | 4.33%       | 73.87%     |
| 120.0              | 124.147       | 61.177      | 1174.392  | 4.06%       | 77.93%     |
| 125.0              | 119.824       | 56.393      | 1230.785  | 3.74%       | 81.67%     |
| 130.0              | 115.423       | 51.150      | 1281.936  | 3.39%       | 85.06%     |
| 135.0              | 110.443       | 45.640      | 1327.575  | 3.03%       | 88.09%     |
| 140.0              | 107.278       | 40.313      | 1367.888  | 2.68%       | 90.77%     |
| 145.0              | 105.039       | 35.423      | 1403.311  | 2.35%       | 93.12%     |
| 150.0              | 106.351       | 31.129      | 1434.44   | 2.07%       | 95.18%     |
| 155.0              | 103.996       | 26.620      | 1461.06   | 1.77%       | 96.95%     |
| 160.0              | 97.550        | 21.138      | 1482.198  | 1.40%       | 98.35%     |
| 165.0              | 76.820        | 14.371      | 1496.569  | 0.95%       | 99.31%     |
| 170.0              | 48.022        | 7.406       | 1503.974  | 0.49%       | 99.80%     |
| 175.0              | 25.825        | 2.642       | 1506.616  | 0.18%       | 99.97%     |
| 180.0              | 6.949         | 0.392       | 1507.008  | 0.03%       | 100.00%    |

| ZONAL LUMEN SUMMARY |         |         |         |
|---------------------|---------|---------|---------|
| Zone                | Lumens  | %Lamp   | %Fixt   |
| 0-30                | 84.41   | 5.60%   | 5.60%   |
| 0-40                | 160.95  | 10.68%  | 10.68%  |
| 0-60                | 354.54  | 23.53%  | 23.53%  |
| 0-90                | 761.53  | 50.53%  | 50.53%  |
| 0-120               | 1174.39 | 77.93%  | 77.93%  |
| 0-180               | 1507.01 | 100.00% | 100.00% |
| 60-90               | 406.99  | 27.01%  | 27.01%  |
| 90-120              | 412.86  | 27.40%  | 27.40%  |
| 90-130              | 520.40  | 34.53%  | 34.53%  |
| 90-150              | 672.91  | 44.65%  | 44.65%  |
| 90-180              | 745.08  | 49.44%  | 49.44%  |
| 0-122.77            | 1205.61 | 80.00%  | 80.00%  |

ZONAL LUMEN SUMMARY

|         |        |
|---------|--------|
| 0-10    | 3.52   |
| 10-20   | 24.31  |
| 20-30   | 56.58  |
| 30-40   | 76.54  |
| 40-50   | 88.46  |
| 50-60   | 105.13 |
| 60-70   | 123.39 |
| 70-80   | 137.70 |
| 80-90   | 145.90 |
| 90-100  | 146.59 |
| 100-110 | 139.82 |
| 110-120 | 126.44 |
| 120-130 | 107.54 |
| 130-140 | 85.95  |
| 140-150 | 66.55  |
| 150-160 | 47.76  |
| 160-170 | 21.78  |
| 170-180 | 2.64   |



C90(Max): ———

C0/C180: ———

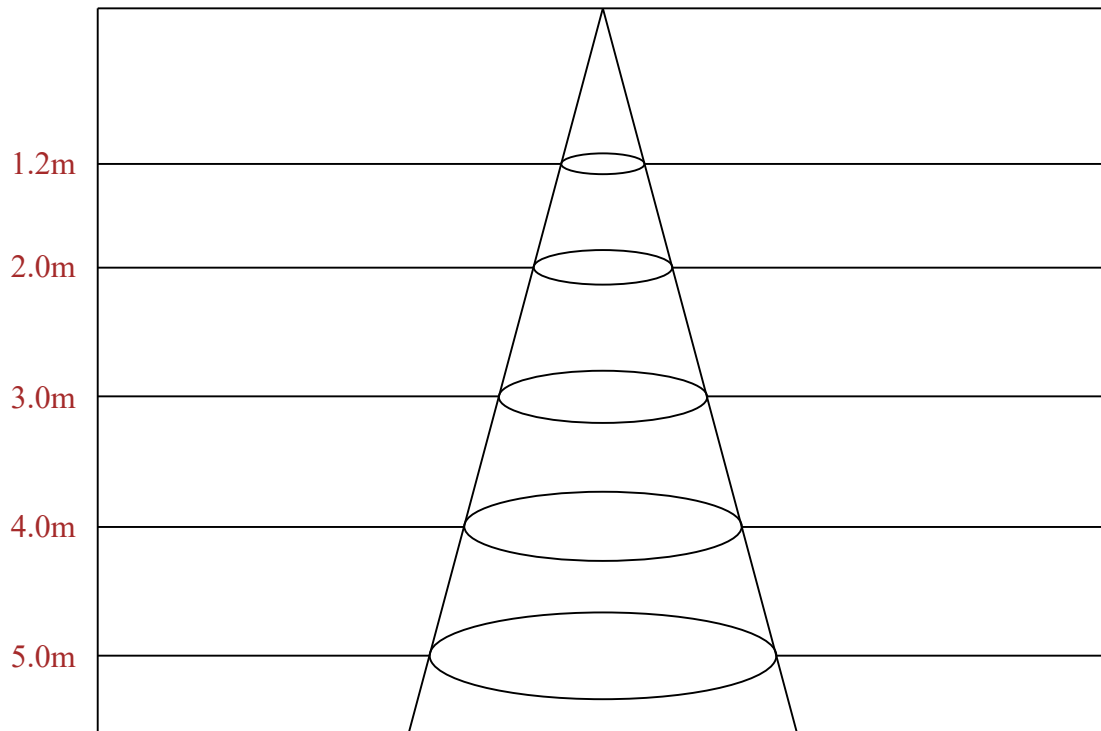
C90/C270: ———

Field angle(10%Imax):C0/180Left:222.7 Right:132.7

:C90/270Left:256.5 Right:83.7

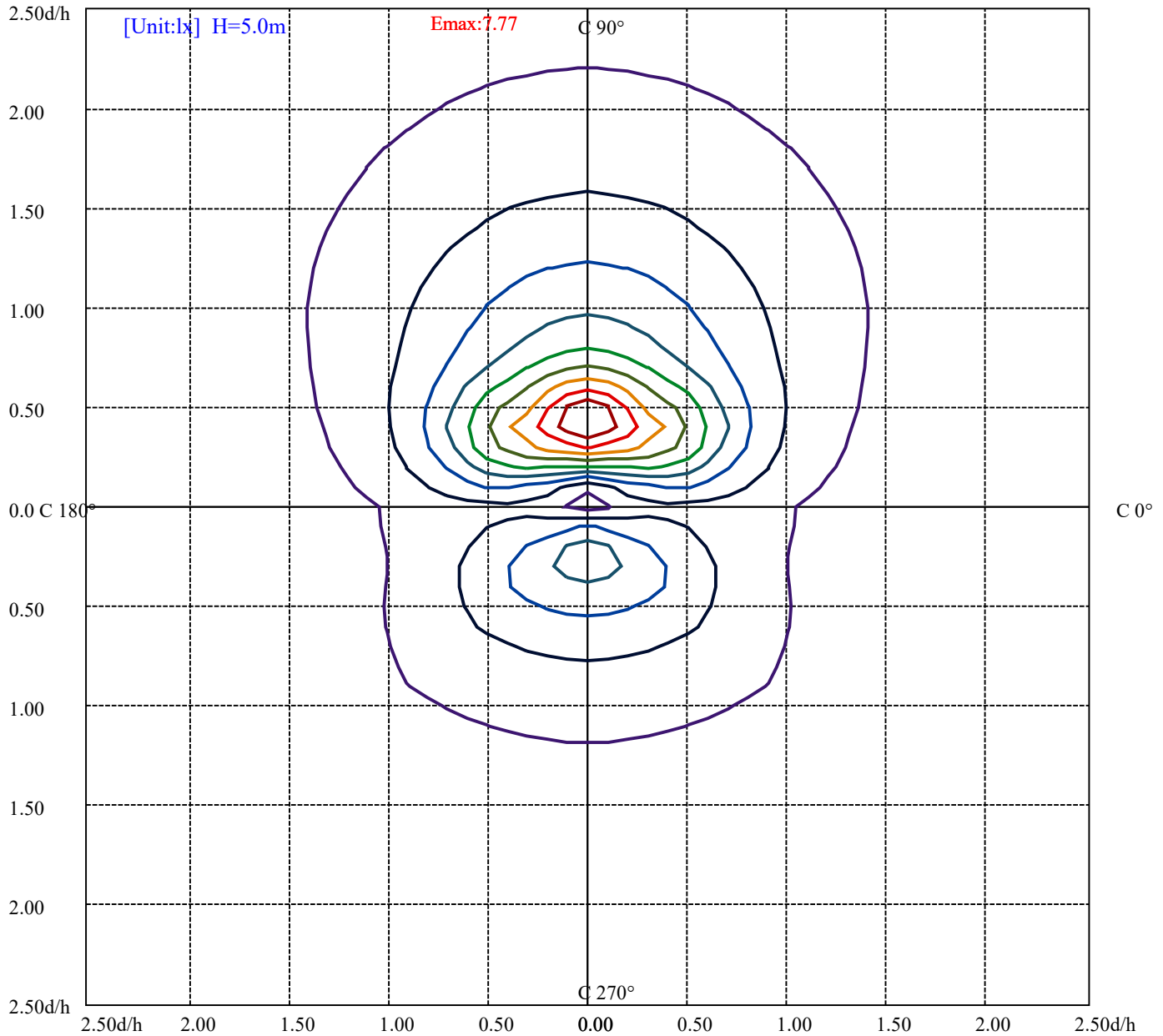
Beam Angle(50%Imax):C0/180Left:211.3 Right:121.3

:C90/270Left:79.8 Right:74.0

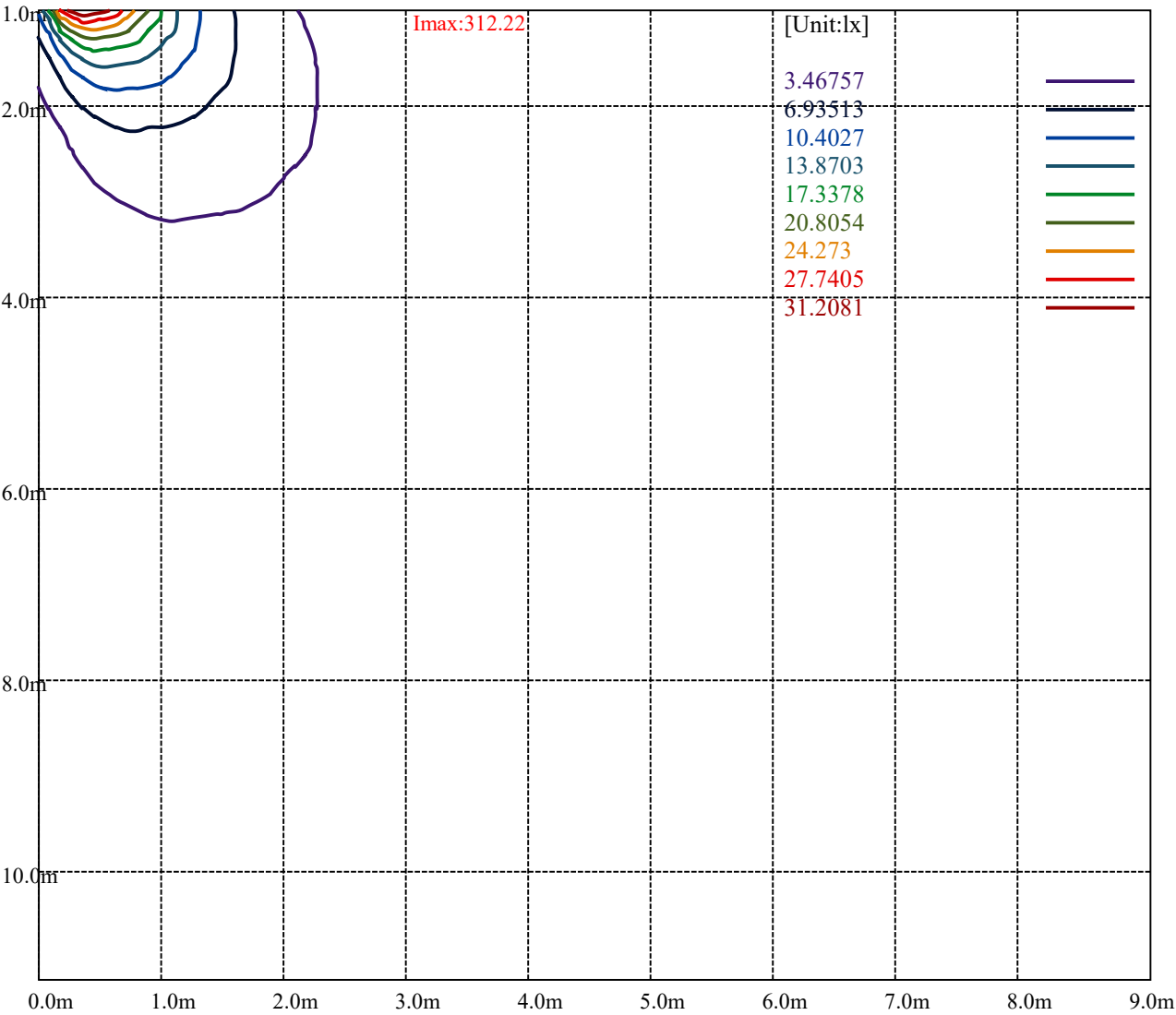


Max , Ave

Beam angle of C90 plane 344.28



|                    |   |
|--------------------|---|
| (10%Emax) 0.777196 | — |
| (20%Emax) 1.554388 | — |
| (30%Emax) 2.331584 | — |
| (40%Emax) 3.108776 | — |
| (50%Emax) 3.885972 | — |
| (60%Emax) 4.66316  | — |
| (70%Emax) 5.44036  | — |
| (80%Emax) 6.21756  | — |
| (90%Emax) 6.99476  | — |



Luminance Table

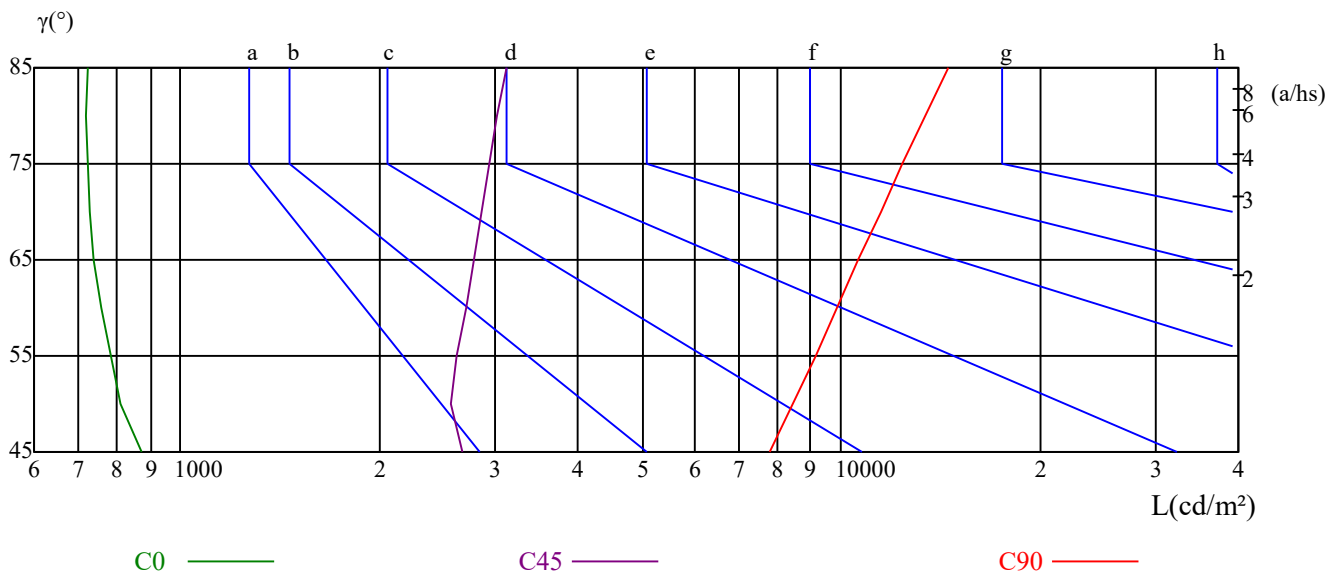
| $\gamma$ | 45   | 50   | 55   | 60   | 65    | 70    | 75    | 80    | 85    |
|----------|------|------|------|------|-------|-------|-------|-------|-------|
| C0       | 873  | 813  | 783  | 761  | 739   | 729   | 725   | 721   | 722   |
| C45      | 2675 | 2559 | 2619 | 2701 | 2780  | 2857  | 2935  | 3016  | 3115  |
| C90      | 7793 | 8459 | 9163 | 9887 | 10649 | 11505 | 12405 | 13415 | 14571 |

| L(Hor)(65) | L(Ver)(65) | L45(65) | L(Hor)(75) | L(Ver)(75) | L45(75) | L(Hor)(85) | L(Ver)(85) | L45(85) |
|------------|------------|---------|------------|------------|---------|------------|------------|---------|
| 7075       | 21516      | 17138   | 11553      | 37217      | 29451   | 33746      | 114175     | 89990   |

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    | 1.07                                    | 1.07 | 1.07 | 0.99 | 0.99 | 0.99 | 0.84 | 0.84 | 0.84 | 0.70 | 0.70 | 0.70 | 0.57 | 0.57 | 0.57 | 0.51 |
| 1    | 0.87                                    | 0.81 | 0.76 | 0.80 | 0.75 | 0.70 | 0.66 | 0.62 | 0.59 | 0.54 | 0.51 | 0.48 | 0.43 | 0.40 | 0.38 | 0.33 |
| 2    | 0.73                                    | 0.65 | 0.58 | 0.67 | 0.60 | 0.54 | 0.55 | 0.50 | 0.45 | 0.45 | 0.41 | 0.37 | 0.35 | 0.32 | 0.29 | 0.24 |
| 3    | 0.63                                    | 0.54 | 0.47 | 0.58 | 0.50 | 0.43 | 0.48 | 0.41 | 0.36 | 0.38 | 0.33 | 0.29 | 0.30 | 0.26 | 0.23 | 0.18 |
| 4    | 0.55                                    | 0.45 | 0.38 | 0.50 | 0.42 | 0.35 | 0.41 | 0.35 | 0.30 | 0.33 | 0.28 | 0.24 | 0.26 | 0.22 | 0.18 | 0.15 |
| 5    | 0.48                                    | 0.39 | 0.32 | 0.44 | 0.36 | 0.30 | 0.37 | 0.30 | 0.25 | 0.29 | 0.24 | 0.20 | 0.23 | 0.19 | 0.15 | 0.12 |
| 6    | 0.43                                    | 0.34 | 0.27 | 0.39 | 0.31 | 0.25 | 0.33 | 0.26 | 0.21 | 0.26 | 0.21 | 0.17 | 0.20 | 0.16 | 0.13 | 0.10 |
| 7    | 0.38                                    | 0.30 | 0.23 | 0.35 | 0.27 | 0.22 | 0.29 | 0.23 | 0.18 | 0.24 | 0.18 | 0.15 | 0.18 | 0.14 | 0.11 | 0.08 |
| 8    | 0.35                                    | 0.26 | 0.20 | 0.32 | 0.24 | 0.19 | 0.26 | 0.20 | 0.16 | 0.21 | 0.16 | 0.13 | 0.17 | 0.13 | 0.10 | 0.07 |
| 9    | 0.31                                    | 0.23 | 0.18 | 0.29 | 0.21 | 0.16 | 0.24 | 0.18 | 0.14 | 0.20 | 0.15 | 0.11 | 0.15 | 0.11 | 0.09 | 0.06 |
| 10   | 0.29                                    | 0.21 | 0.16 | 0.26 | 0.19 | 0.14 | 0.22 | 0.16 | 0.12 | 0.18 | 0.13 | 0.10 | 0.14 | 0.10 | 0.08 | 0.05 |

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| Intensity data(cd) |        |        |        |        |        |        |        |        | Appendix Page: 10 Total:12 |  |
|--------------------|--------|--------|--------|--------|--------|--------|--------|--------|----------------------------|--|
| C/γ(°)             | 0.0    | 5.0    | 10.0   | 15.0   | 20.0   | 25.0   | 30.0   | 35.0   | 40.0                       |  |
| 0.0                | 11.12  | 11.12  | 25.01  | 33.35  | 40.76  | 45.40  | 50.03  | 54.66  | 53.74                      |  |
| 15.0               | 12.97  | 11.12  | 31.50  | 46.32  | 73.19  | 100.06 | 113.96 | 114.88 | 116.74                     |  |
| 30.0               | 16.68  | 11.12  | 37.99  | 79.68  | 111.18 | 152.87 | 175.10 | 177.88 | 163.06                     |  |
| 45.0               | 20.38  | 12.04  | 53.74  | 108.40 | 151.94 | 191.78 | 205.68 | 192.71 | 176.03                     |  |
| 60.0               | 23.16  | 12.04  | 69.49  | 135.26 | 193.63 | 218.65 | 199.19 | 192.71 | 172.32                     |  |
| 75.0               | 24.09  | 12.97  | 80.60  | 147.31 | 214.94 | 252.00 | 235.32 | 203.82 | 188.07                     |  |
| 90.0               | 25.01  | 12.04  | 80.60  | 153.79 | 226.06 | 272.38 | 243.66 | 216.79 | 194.56                     |  |
| 105.0              | 23.16  | 12.97  | 77.82  | 137.12 | 206.60 | 252.00 | 234.40 | 209.38 | 187.15                     |  |
| 120.0              | 20.38  | 11.12  | 64.85  | 122.29 | 174.18 | 207.53 | 212.16 | 200.12 | 183.44                     |  |
| 135.0              | 6.49   | 11.12  | 48.18  | 95.43  | 132.49 | 176.96 | 206.60 | 211.24 | 184.37                     |  |
| 150.0              | 16.68  | 9.26   | 33.35  | 63.93  | 123.22 | 129.71 | 163.06 | 166.76 | 166.76                     |  |
| 165.0              | 13.90  | 8.34   | 21.31  | 32.43  | 55.59  | 78.75  | 93.57  | 101.91 | 105.62                     |  |
| 180.0              | 11.12  | 22.24  | 30.57  | 37.06  | 43.54  | 45.40  | 50.96  | 53.74  | 56.51                      |  |
| 195.0              | 12.97  | 26.87  | 37.06  | 48.18  | 51.88  | 57.44  | 61.15  | 63.93  | 63.00                      |  |
| 210.0              | 16.68  | 37.06  | 50.96  | 60.22  | 70.41  | 76.90  | 78.75  | 78.75  | 77.82                      |  |
| 225.0              | 20.38  | 46.32  | 64.85  | 79.68  | 88.01  | 90.79  | 88.94  | 87.09  | 85.24                      |  |
| 240.0              | 23.16  | 53.74  | 77.82  | 92.65  | 95.43  | 91.72  | 87.09  | 83.38  | 79.68                      |  |
| 255.0              | 24.09  | 56.51  | 85.24  | 97.28  | 95.43  | 90.79  | 84.31  | 79.68  | 75.97                      |  |
| 270.0              | 25.01  | 58.37  | 86.16  | 98.21  | 96.35  | 89.87  | 84.31  | 79.68  | 75.97                      |  |
| 285.0              | 23.16  | 55.59  | 82.46  | 95.43  | 95.43  | 89.87  | 84.31  | 79.68  | 77.82                      |  |
| 300.0              | 20.38  | 50.96  | 73.19  | 88.01  | 90.79  | 89.87  | 86.16  | 82.46  | 79.68                      |  |
| 315.0              | 6.49   | 42.62  | 60.22  | 72.26  | 81.53  | 85.24  | 84.31  | 82.46  | 81.53                      |  |
| 330.0              | 16.68  | 34.28  | 46.32  | 55.59  | 63.93  | 70.41  | 73.19  | 72.26  | 70.41                      |  |
| 345.0              | 13.90  | 27.79  | 36.13  | 42.62  | 48.18  | 52.81  | 56.51  | 58.37  | 57.44                      |  |
| 360.0              | 11.12  | 11.12  | 25.01  | 33.35  | 40.76  | 45.40  | 50.03  | 54.66  | 53.74                      |  |
| C/γ(°)             | 45.0   | 50.0   | 55.0   | 60.0   | 65.0   | 70.0   | 75.0   | 80.0   | 85.0                       |  |
| 0.0                | 59.29  | 56.51  | 57.44  | 57.44  | 57.44  | 57.44  | 57.44  | 56.51  | 56.51                      |  |
| 15.0               | 100.06 | 95.43  | 90.79  | 92.65  | 95.43  | 98.21  | 100.06 | 101.91 | 103.76                     |  |
| 30.0               | 142.68 | 131.56 | 132.49 | 138.97 | 144.53 | 150.09 | 154.72 | 158.43 | 161.21                     |  |
| 45.0               | 159.35 | 166.76 | 176.96 | 187.15 | 196.41 | 203.82 | 210.31 | 214.94 | 219.57                     |  |
| 60.0               | 187.15 | 201.04 | 214.94 | 227.91 | 239.03 | 248.29 | 256.63 | 264.04 | 268.68                     |  |
| 75.0               | 206.60 | 222.35 | 238.10 | 252.93 | 265.90 | 277.02 | 286.28 | 293.69 | 299.25                     |  |
| 90.0               | 212.16 | 229.77 | 246.44 | 261.27 | 274.24 | 286.28 | 295.54 | 302.96 | 308.52                     |  |
| 105.0              | 203.82 | 219.57 | 235.32 | 250.15 | 262.19 | 273.31 | 282.57 | 289.06 | 295.54                     |  |
| 120.0              | 181.59 | 195.49 | 208.46 | 220.50 | 232.54 | 240.88 | 248.29 | 254.78 | 260.34                     |  |
| 135.0              | 166.76 | 159.35 | 168.62 | 178.81 | 187.15 | 194.56 | 200.12 | 204.75 | 208.46                     |  |
| 150.0              | 145.46 | 131.56 | 124.15 | 129.71 | 135.26 | 140.82 | 143.60 | 147.31 | 149.16                     |  |
| 165.0              | 105.62 | 94.50  | 88.01  | 84.31  | 87.09  | 89.87  | 91.72  | 93.57  | 94.50                      |  |
| 180.0              | 57.44  | 57.44  | 56.51  | 56.51  | 55.59  | 55.59  | 55.59  | 55.59  | 54.66                      |  |
| 195.0              | 60.22  | 56.51  | 53.74  | 50.96  | 49.10  | 48.18  | 47.25  | 46.32  | 45.40                      |  |
| 210.0              | 75.97  | 75.04  | 74.12  | 74.12  | 74.12  | 74.12  | 73.19  | 73.19  | 71.34                      |  |
| 225.0              | 84.31  | 83.38  | 83.38  | 83.38  | 83.38  | 83.38  | 83.38  | 83.38  | 82.46                      |  |
| 240.0              | 77.82  | 75.97  | 75.04  | 75.04  | 74.12  | 74.12  | 73.19  | 72.26  | 72.26                      |  |
| 255.0              | 73.19  | 72.26  | 70.41  | 70.41  | 69.49  | 68.56  | 67.63  | 67.63  | 66.71                      |  |
| 270.0              | 73.19  | 72.26  | 71.34  | 70.41  | 69.49  | 69.49  | 68.56  | 67.63  | 67.63                      |  |
| 285.0              | 73.19  | 72.26  | 71.34  | 71.34  | 70.41  | 70.41  | 69.49  | 69.49  | 68.56                      |  |
| 300.0              | 77.82  | 75.97  | 75.97  | 75.97  | 75.97  | 75.97  | 75.97  | 75.97  | 75.97                      |  |
| 315.0              | 80.60  | 79.68  | 79.68  | 80.60  | 80.60  | 81.53  | 82.46  | 82.46  | 82.46                      |  |
| 330.0              | 67.63  | 65.78  | 64.85  | 63.93  | 63.93  | 63.93  | 63.93  | 63.93  | 63.93                      |  |
| 345.0              | 54.66  | 50.03  | 45.40  | 42.62  | 40.76  | 38.91  | 37.99  | 37.99  | 37.06                      |  |
| 360.0              | 59.29  | 56.51  | 57.44  | 57.44  | 57.44  | 57.44  | 57.44  | 56.51  | 56.51                      |  |

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| Intensity data(cd) |        |        |        |        |        |        |        |        | Appendix Page: 11 Total:12 |
|--------------------|--------|--------|--------|--------|--------|--------|--------|--------|----------------------------|
| C/γ(°)             | 90.0   | 95.0   | 100.0  | 105.0  | 110.0  | 115.0  | 120.0  | 125.0  | 130.0                      |
| 0.0                | 56.51  | 55.59  | 56.51  | 56.51  | 56.51  | 55.59  | 56.51  | 56.51  | 57.44                      |
| 15.0               | 104.69 | 104.69 | 103.76 | 102.84 | 100.99 | 99.13  | 96.35  | 92.65  | 93.57                      |
| 30.0               | 162.13 | 162.13 | 161.21 | 159.35 | 156.57 | 152.87 | 148.24 | 141.75 | 136.19                     |
| 45.0               | 222.35 | 222.35 | 220.50 | 217.72 | 213.09 | 206.60 | 200.12 | 190.85 | 181.59                     |
| 60.0               | 271.46 | 272.38 | 269.60 | 266.82 | 261.27 | 252.93 | 243.66 | 232.54 | 220.50                     |
| 75.0               | 302.96 | 302.96 | 301.10 | 297.40 | 290.91 | 282.57 | 271.46 | 258.49 | 243.66                     |
| 90.0               | 312.22 | 312.22 | 310.37 | 305.74 | 299.25 | 289.99 | 278.87 | 264.97 | 251.07                     |
| 105.0              | 297.40 | 298.32 | 296.47 | 291.84 | 286.28 | 277.02 | 265.90 | 253.85 | 239.96                     |
| 120.0              | 262.19 | 263.12 | 260.34 | 257.56 | 252.00 | 244.59 | 234.40 | 224.21 | 212.16                     |
| 135.0              | 210.31 | 211.24 | 209.38 | 206.60 | 202.90 | 196.41 | 189.00 | 180.66 | 172.32                     |
| 150.0              | 151.01 | 151.01 | 150.09 | 149.16 | 145.46 | 141.75 | 137.12 | 132.49 | 126.00                     |
| 165.0              | 95.43  | 95.43  | 95.43  | 94.50  | 92.65  | 90.79  | 88.01  | 85.24  | 82.46                      |
| 180.0              | 54.66  | 55.59  | 56.51  | 56.51  | 56.51  | 57.44  | 57.44  | 57.44  | 57.44                      |
| 195.0              | 45.40  | 45.40  | 45.40  | 45.40  | 46.32  | 48.18  | 50.96  | 53.74  | 56.51                      |
| 210.0              | 70.41  | 69.49  | 68.56  | 68.56  | 67.63  | 66.71  | 65.78  | 64.85  | 63.93                      |
| 225.0              | 81.53  | 80.60  | 78.75  | 77.82  | 75.97  | 75.04  | 74.12  | 71.34  | 68.56                      |
| 240.0              | 70.41  | 69.49  | 69.49  | 67.63  | 66.71  | 65.78  | 63.93  | 62.07  | 60.22                      |
| 255.0              | 65.78  | 64.85  | 63.00  | 63.00  | 62.07  | 62.07  | 61.15  | 59.29  | 57.44                      |
| 270.0              | 66.71  | 65.78  | 64.85  | 64.85  | 64.85  | 64.85  | 63.93  | 62.07  | 58.37                      |
| 285.0              | 68.56  | 67.63  | 66.71  | 65.78  | 65.78  | 64.85  | 63.93  | 62.07  | 61.15                      |
| 300.0              | 75.04  | 74.12  | 73.19  | 73.19  | 72.26  | 71.34  | 70.41  | 68.56  | 66.71                      |
| 315.0              | 82.46  | 81.53  | 81.53  | 80.60  | 80.60  | 79.68  | 78.75  | 76.90  | 75.97                      |
| 330.0              | 63.93  | 64.85  | 64.85  | 65.78  | 65.78  | 66.71  | 67.63  | 68.56  | 69.49                      |
| 345.0              | 37.99  | 38.91  | 39.84  | 41.69  | 43.54  | 47.25  | 51.88  | 54.66  | 57.44                      |
| 360.0              | 56.51  | 55.59  | 56.51  | 56.51  | 56.51  | 55.59  | 56.51  | 56.51  | 57.44                      |
|                    |        |        |        |        |        |        |        |        |                            |
| C/γ(°)             | 135.0  | 140.0  | 145.0  | 150.0  | 155.0  | 160.0  | 165.0  | 170.0  | 175.0                      |
| 0.0                | 57.44  | 54.66  | 50.96  | 49.10  | 43.54  | 38.91  | 35.21  | 29.65  | 16.68                      |
| 15.0               | 95.43  | 105.62 | 99.13  | 88.01  | 80.60  | 66.71  | 50.03  | 36.13  | 21.31                      |
| 30.0               | 142.68 | 159.35 | 176.03 | 179.74 | 165.84 | 126.00 | 82.46  | 58.37  | 30.57                      |
| 45.0               | 171.40 | 177.88 | 199.19 | 219.57 | 220.50 | 178.81 | 127.85 | 83.38  | 46.32                      |
| 60.0               | 206.60 | 192.71 | 201.97 | 225.13 | 214.94 | 220.50 | 170.47 | 115.81 | 57.44                      |
| 75.0               | 228.84 | 213.09 | 196.41 | 218.65 | 232.54 | 243.66 | 203.82 | 129.71 | 63.00                      |
| 90.0               | 235.32 | 217.72 | 201.04 | 226.99 | 244.59 | 265.90 | 213.09 | 141.75 | 68.56                      |
| 105.0              | 225.13 | 209.38 | 192.71 | 207.53 | 223.28 | 234.40 | 202.90 | 132.49 | 65.78                      |
| 120.0              | 199.19 | 185.29 | 186.22 | 194.56 | 189.00 | 207.53 | 166.76 | 111.18 | 57.44                      |
| 135.0              | 161.21 | 164.91 | 170.47 | 183.44 | 193.63 | 163.06 | 125.07 | 85.24  | 43.54                      |
| 150.0              | 125.07 | 131.56 | 143.60 | 141.75 | 126.00 | 114.88 | 84.31  | 56.51  | 33.35                      |
| 165.0              | 78.75  | 81.53  | 85.24  | 74.12  | 72.26  | 63.93  | 51.88  | 37.99  | 25.01                      |
| 180.0              | 54.66  | 51.88  | 46.32  | 40.76  | 38.91  | 35.21  | 28.72  | 12.04  | 4.63                       |
| 195.0              | 57.44  | 53.74  | 48.18  | 41.69  | 40.76  | 35.21  | 25.01  | 9.26   | 4.63                       |
| 210.0              | 62.07  | 61.15  | 55.59  | 48.18  | 40.76  | 31.50  | 23.16  | 4.63   | 6.49                       |
| 225.0              | 65.78  | 63.93  | 61.15  | 52.81  | 43.54  | 34.28  | 24.09  | 3.71   | 7.41                       |
| 240.0              | 58.37  | 56.51  | 50.03  | 45.40  | 39.84  | 35.21  | 27.79  | 4.63   | 8.34                       |
| 255.0              | 52.81  | 45.40  | 39.84  | 36.13  | 33.35  | 32.43  | 27.79  | 7.41   | 9.26                       |
| 270.0              | 51.88  | 44.47  | 38.91  | 34.28  | 31.50  | 31.50  | 30.57  | 10.19  | 10.19                      |
| 285.0              | 57.44  | 51.88  | 46.32  | 41.69  | 37.06  | 37.06  | 31.50  | 14.82  | 9.26                       |
| 300.0              | 65.78  | 65.78  | 62.07  | 54.66  | 47.25  | 39.84  | 29.65  | 17.60  | 9.26                       |
| 315.0              | 73.19  | 70.41  | 67.63  | 59.29  | 48.18  | 36.13  | 27.79  | 16.68  | 9.26                       |
| 330.0              | 68.56  | 63.93  | 57.44  | 49.10  | 51.88  | 30.57  | 27.79  | 17.60  | 6.49                       |
| 345.0              | 55.59  | 51.88  | 44.47  | 39.84  | 36.13  | 37.99  | 25.94  | 15.75  | 5.56                       |
| 360.0              | 57.44  | 54.66  | 50.96  | 49.10  | 43.54  | 38.91  | 35.21  | 29.65  | 16.68                      |

Intensity data(cd)

|        |       |
|--------|-------|
| C/γ(°) | 180.0 |
| 0.0    | 3.71  |
| 15.0   | 9.26  |
| 30.0   | 11.12 |
| 45.0   | 13.90 |
| 60.0   | 16.68 |
| 75.0   | 19.46 |
| 90.0   | 18.53 |
| 105.0  | 17.60 |
| 120.0  | 17.60 |
| 135.0  | 14.82 |
| 150.0  | 12.97 |
| 165.0  | 11.12 |
| 180.0  | 0.00  |
| 195.0  | 0.00  |
| 210.0  | 0.00  |
| 225.0  | 0.00  |
| 240.0  | 0.00  |
| 255.0  | 0.00  |
| 270.0  | 0.00  |
| 285.0  | 0.00  |
| 300.0  | 0.00  |
| 315.0  | 0.00  |
| 330.0  | 0.00  |
| 345.0  | 0.00  |
| 360.0  | 3.71  |