

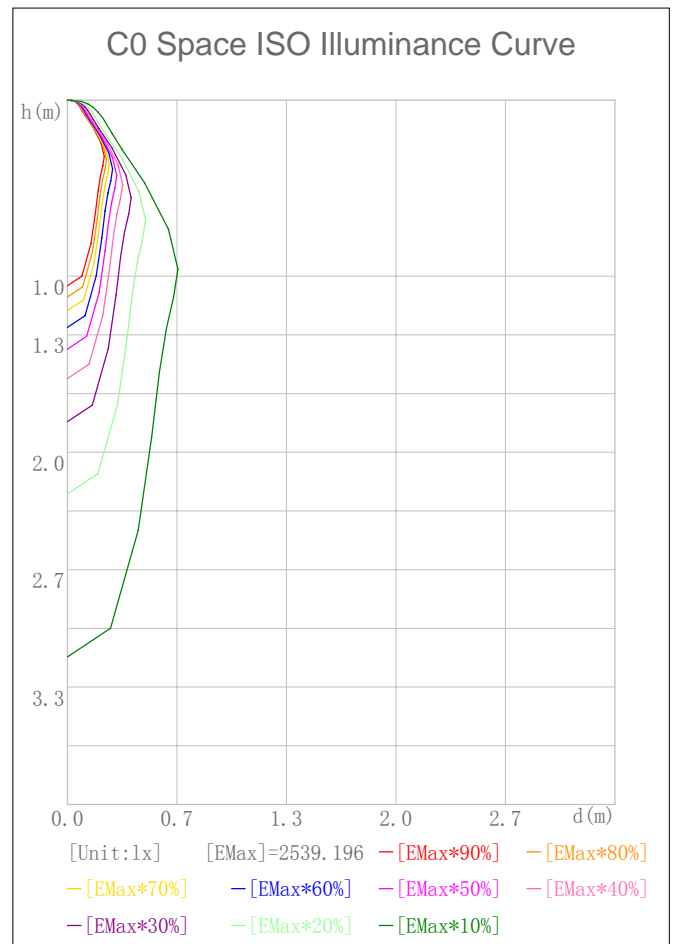
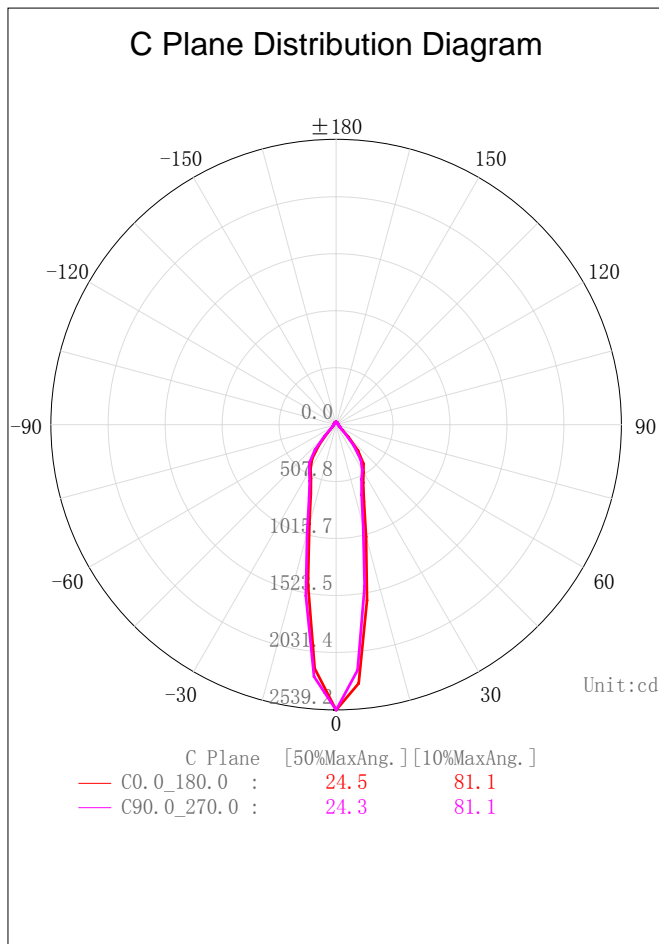
Indoor Luminaire Photometric Data

Description Information

| | | | |
|---|-------------------------|----------------------------------|---------------------------|
| Luminary Name: DC13W-3500K, Ra90, Reflector 24° | | Lum. Catalog: 1300LM | Test ID: 01 |
| Lamp Name: CL2-13MR | | Lamp Catalog: lamps and lanterns | Test Date: 2017/06/13 |
| LED Chip: Citizen CLU028-1203C4-35XH5M3 | | Shld. Ang(°): | Test Machine:GON-2000 |
| Test Lab: | | Frequency (Hz): | Lamp CCT(K): 3000K Ra: 90 |
| Lum. Size (W*L*H): 0.000m*0.000m*0.000m | | Lum. Area (m2): 0.000 | Lum. W (kg): 0.000 |
| Test System: C, γ | Test Step: C=90.0 γ=5.0 | Temp. (°C): 25 | Humidity(%): 50.0 |

Character Parameter

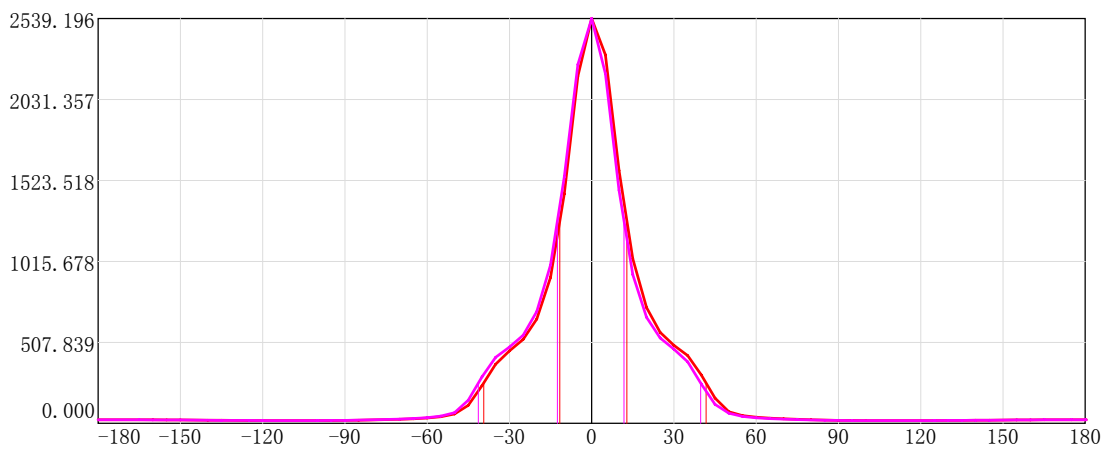
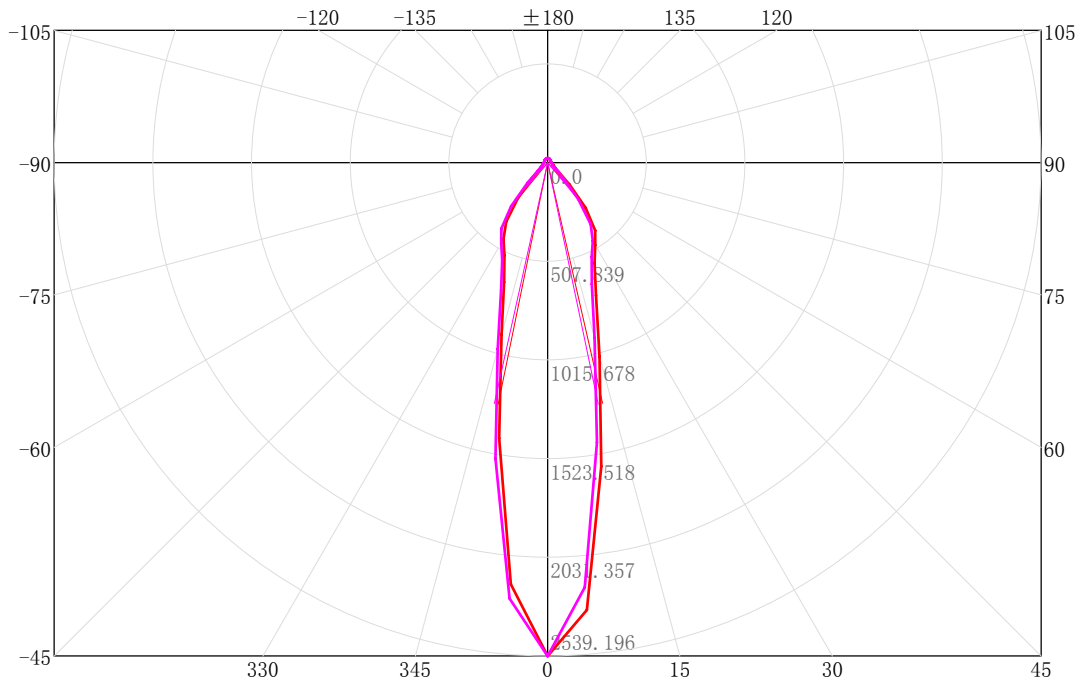
| Lamp Speciality Parameter | Luminaire Speciality Parameter | |
|--|--------------------------------|--|
| Rated Flux(lm): 1257.000 | Luminary Flux(lm): 1331.617 | Field Angle(10%Imax): 81.1(°) |
| Rated Power(W): 13W | Luminary Efficiency: 105.94% | Down Lumens&Percent: 1211.020lm 90.94% |
| Rated Voltage(V): 36V 350mA | Luminary EER(lm/W): 37.405 | Up Lumens&Percent: 120.597lm 9.06% |
| Tested Power(W): 35.600 | Max. Candela(cd): 2539.196 | S/MH: C0_a180=0.408 C90_270=0.405 |
| Lamps' Inside: 1 | Max Cand@Ang. (°): C=0.0 γ=0.0 | CIE Type: Semi-Direct |
| Tested Electrics (V, A, pf): 220.4, 0.215, 0.750 | Beam Angle (50%Imax): 24.5(°) | ErP φ use(90°): 1032.237lm |
| Lamp Size (W*L*H): 0.000m*0.000m*0.000m | Left=-11.6°, Right=12.9° | IRF(%): 460.133 |



2D Plane Light Intensity Distribution Curve

| | | |
|---|----------------------------------|-----------------------|
| Lum. Name: DC13W-3500K, Ra90, Reflector 24° | Lum. Catalog: 1300LM | Test ID: 01 |
| Lamp Name: CL2-13MR | Lamp Catalog: lamps and lanterns | Test Lab: |
| LED Chip: Citizen CLU028-1203C4-35XH5M3 | Test Machine:GON-2000 | Test Date: 2017/06/13 |

C Plane Distribution Diagram

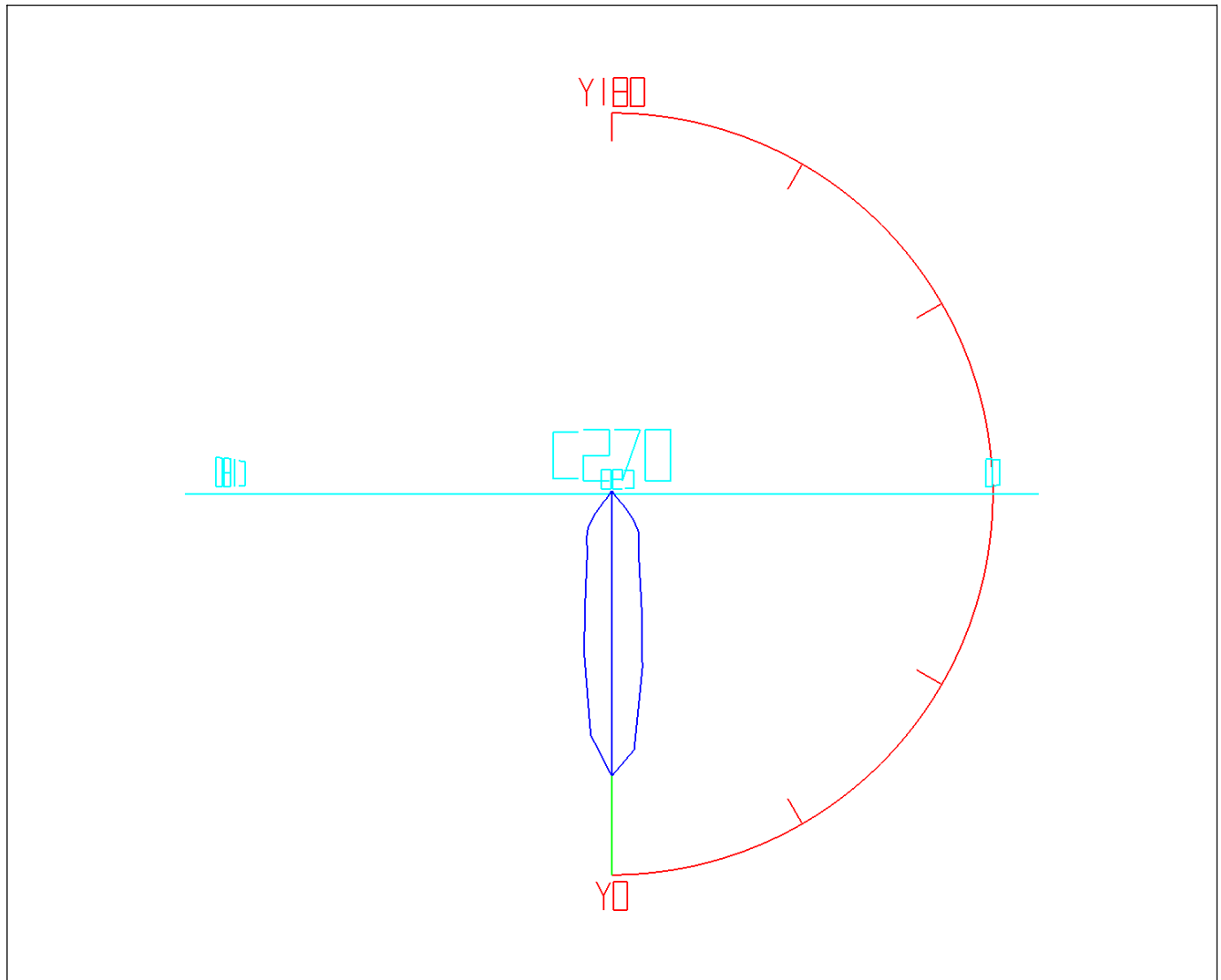


C Plane [50%MaxAng.] [10%MaxAng.] Unit:cd
 — C0.0_180.0 : 24.5 81.1
 — C90.0_270.0 : 24.3 81.1

3D Light Intensity Distribution Modal

| | | |
|---|----------------------------------|-----------------------|
| Lum. Name: DC13W-3500K, Ra90, Reflector 24° | Lum. Catalog: 1300LM | Test ID: 01 |
| Lamp Name: CL2-13MR | Lamp Catalog: lamps and lanterns | Test Lab: |
| LED Chip: Citizen CLU028-1203C4-35XH5M3 | Test Machine:GON-2000 | Test Date: 2017/06/13 |

3D Light Intensity Distribution Modal



Curves: 3D Model —— Fixture —— Vert. HUD —— Hori. HUD ——
 View Angles: Orient:0 Tilt:0 Roll:0 Spin:0

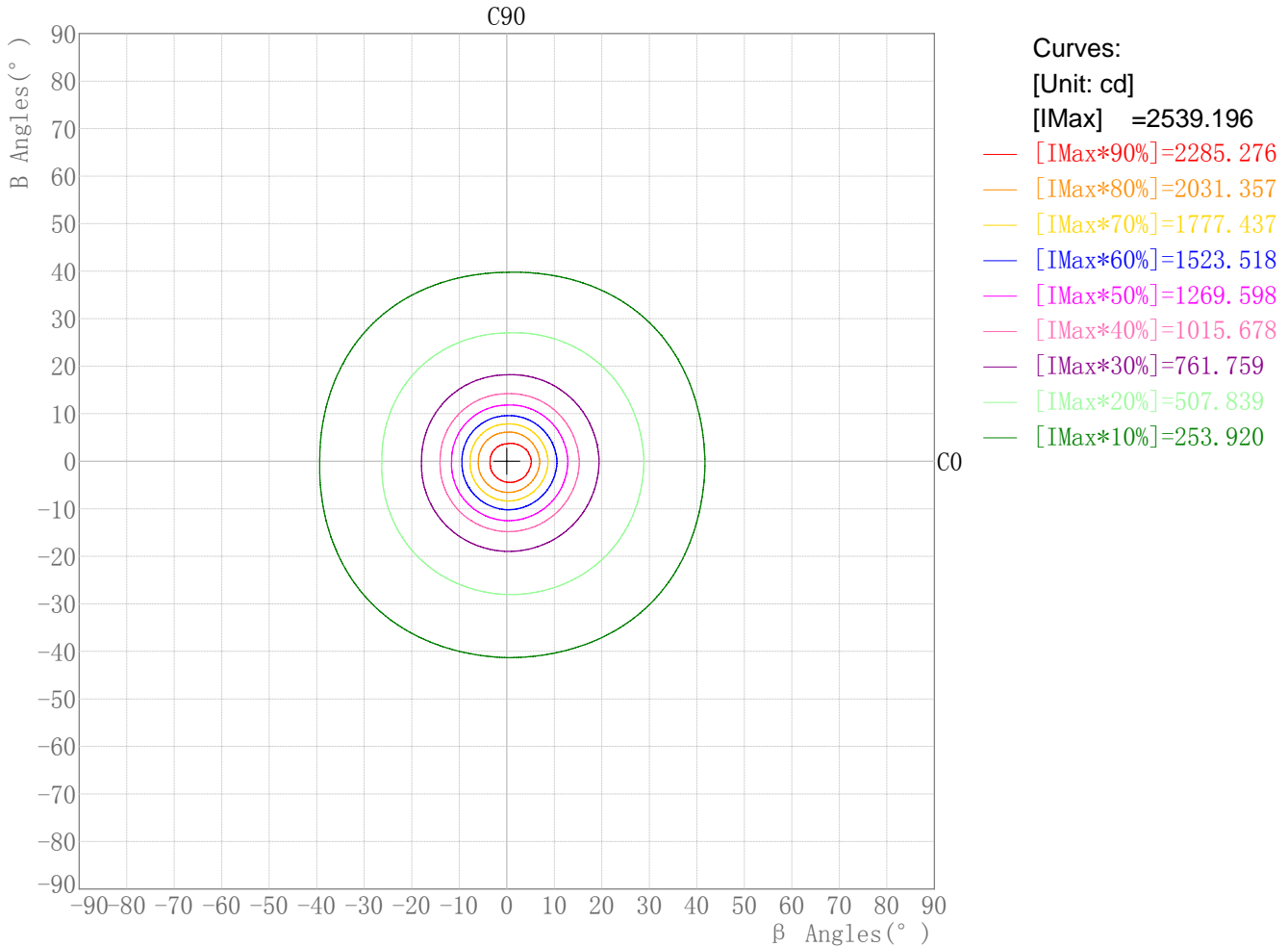
Zonal Flux Tabulation

| Zone(γ) | Zone Flux (lm) | Sums Flux (lm) | Zone%Lamp | Sums%Lamp |
|-------------|-------------------|-------------------|-----------|-----------|
| 0.0-5.0 | 57.05 | 57.05 | 4.54 | 4.54 |
| 5.0-10.0 | 133.86 | 190.91 | 10.65 | 15.19 |
| 10.0-15.0 | 146.95 | 337.86 | 11.69 | 26.88 |
| 15.0-20.0 | 136.44 | 474.29 | 10.85 | 37.73 |
| 20.0-25.0 | 129.37 | 603.67 | 10.29 | 48.02 |
| 25.0-30.0 | 128.92 | 732.59 | 10.26 | 58.28 |
| 30.0-35.0 | 128.34 | 860.93 | 10.21 | 68.49 |
| 35.0-40.0 | 111.69 | 972.62 | 8.89 | 77.38 |
| 40.0-45.0 | 74.85 | 1047.47 | 5.95 | 83.33 |
| 45.0-50.0 | 40.55 | 1088.02 | 3.23 | 86.56 |
| 50.0-55.0 | 24.31 | 1112.32 | 1.93 | 88.49 |
| 55.0-60.0 | 18.83 | 1131.15 | 1.50 | 89.99 |
| 60.0-65.0 | 16.23 | 1147.39 | 1.29 | 91.28 |
| 65.0-70.0 | 14.75 | 1162.14 | 1.17 | 92.45 |
| 70.0-75.0 | 13.65 | 1175.79 | 1.09 | 93.54 |
| 75.0-80.0 | 12.68 | 1188.47 | 1.01 | 94.55 |
| 80.0-85.0 | 11.71 | 1200.18 | 0.93 | 95.48 |
| 85.0-90.0 | 10.84 | 1211.02 | 0.86 | 96.34 |
| 90.0-95.0 | 10.30 | 1221.32 | 0.82 | 97.16 |
| 95.0-100.0 | 9.98 | 1231.29 | 0.79 | 97.95 |
| 100.0-105.0 | 9.68 | 1240.98 | 0.77 | 98.73 |
| 105.0-110.0 | 9.39 | 1250.37 | 0.75 | 99.47 |
| 110.0-115.0 | 9.10 | 1259.47 | 0.72 | 100.20 |
| 115.0-120.0 | 8.78 | 1268.25 | 0.70 | 100.89 |
| 120.0-125.0 | 8.44 | 1276.68 | 0.67 | 101.57 |
| 125.0-130.0 | 8.08 | 1284.76 | 0.64 | 102.21 |
| 130.0-135.0 | 7.70 | 1292.46 | 0.61 | 102.82 |
| 135.0-140.0 | 7.29 | 1299.75 | 0.58 | 103.40 |
| 140.0-145.0 | 6.82 | 1306.57 | 0.54 | 103.94 |
| 145.0-150.0 | 6.22 | 1312.79 | 0.49 | 104.44 |
| 150.0-155.0 | 5.50 | 1318.28 | 0.44 | 104.88 |
| 155.0-160.0 | 4.66 | 1322.94 | 0.37 | 105.25 |
| 160.0-165.0 | 3.73 | 1326.67 | 0.30 | 105.54 |
| 165.0-170.0 | 2.73 | 1329.40 | 0.22 | 105.76 |
| 170.0-175.0 | 1.66 | 1331.06 | 0.13 | 105.89 |
| 175.0-180.0 | 0.56 | 1331.62 | 0.04 | 105.94 |

Rectangle ISO Lighting Intensity Diagram

| | | |
|---|----------------------------------|-----------------------|
| Lum. Name: DC13W-3500K, Ra90, Reflector 24° | Lum. Catalog: 1300LM | Test ID: 01 |
| Lamp Name: CL2-13MR | Lamp Catalog: lamps and lanterns | Test Lab: |
| LED Chip: Citizen CLU028-1203C4-35XH5M3 | Test Machine:GON-2000 | Test Date: 2017/06/13 |

ISO Lighting Intensity Curve

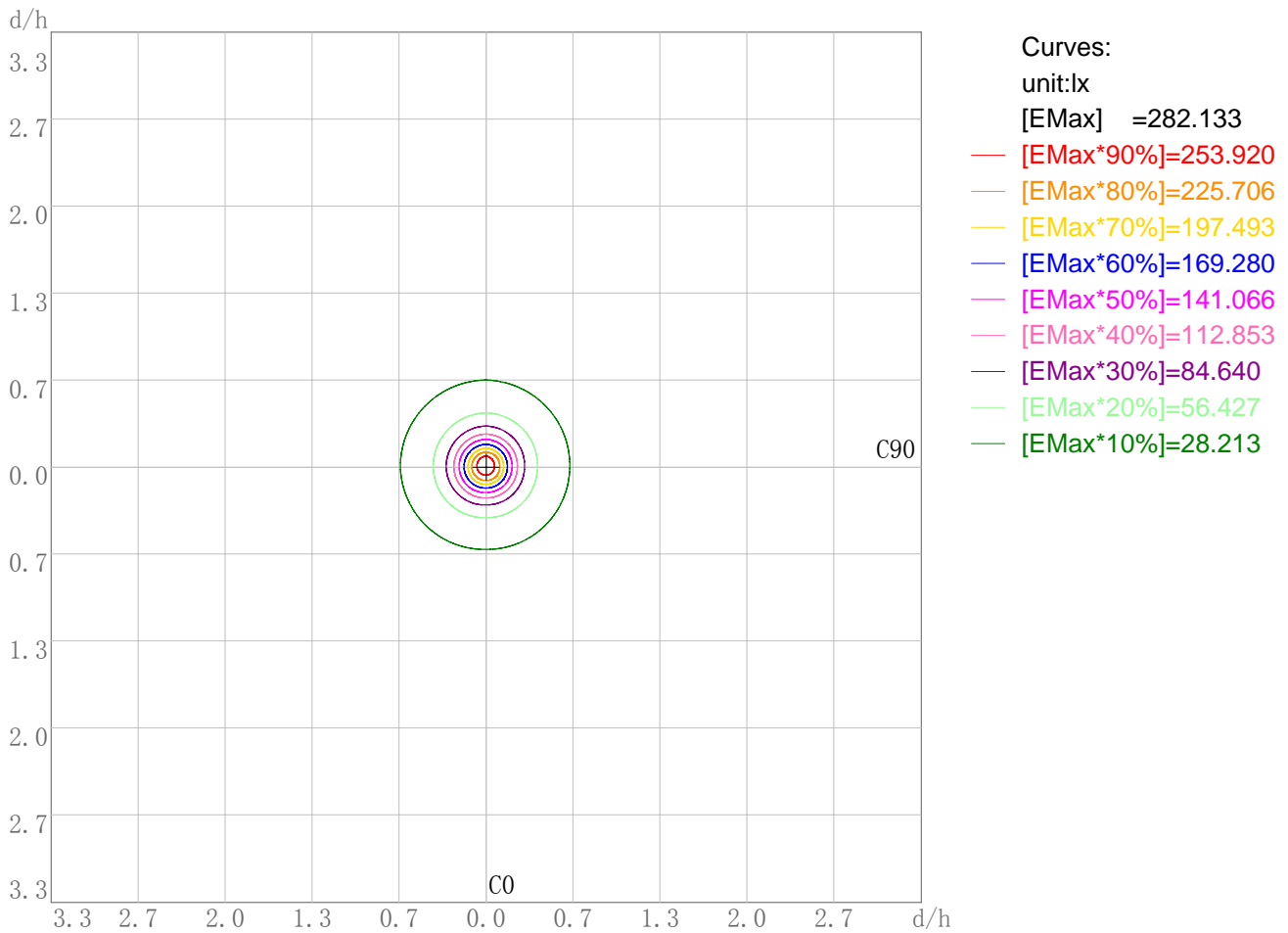


Maximum Light Intensity(cd): 2539.20
 Maximum Cand.@Angle: H=0.0°,V=0.0°

Plane ISO-Illuminance Diagram

| | | |
|---|----------------------------------|-----------------------|
| Lum. Name: DC13W-3500K, Ra90, Reflector 24° | Lum. Catalog: 1300LM | Test ID: 01 |
| Lamp Name: CL2-13MR | Lamp Catalog: lamps and lanterns | Test Lab: |
| LED Chip: Citizen CLU028-1203C4-35XH5M3 | Test Machine:GON-2000 | Test Date: 2017/06/13 |

Plane ISO-Illuminance Curve

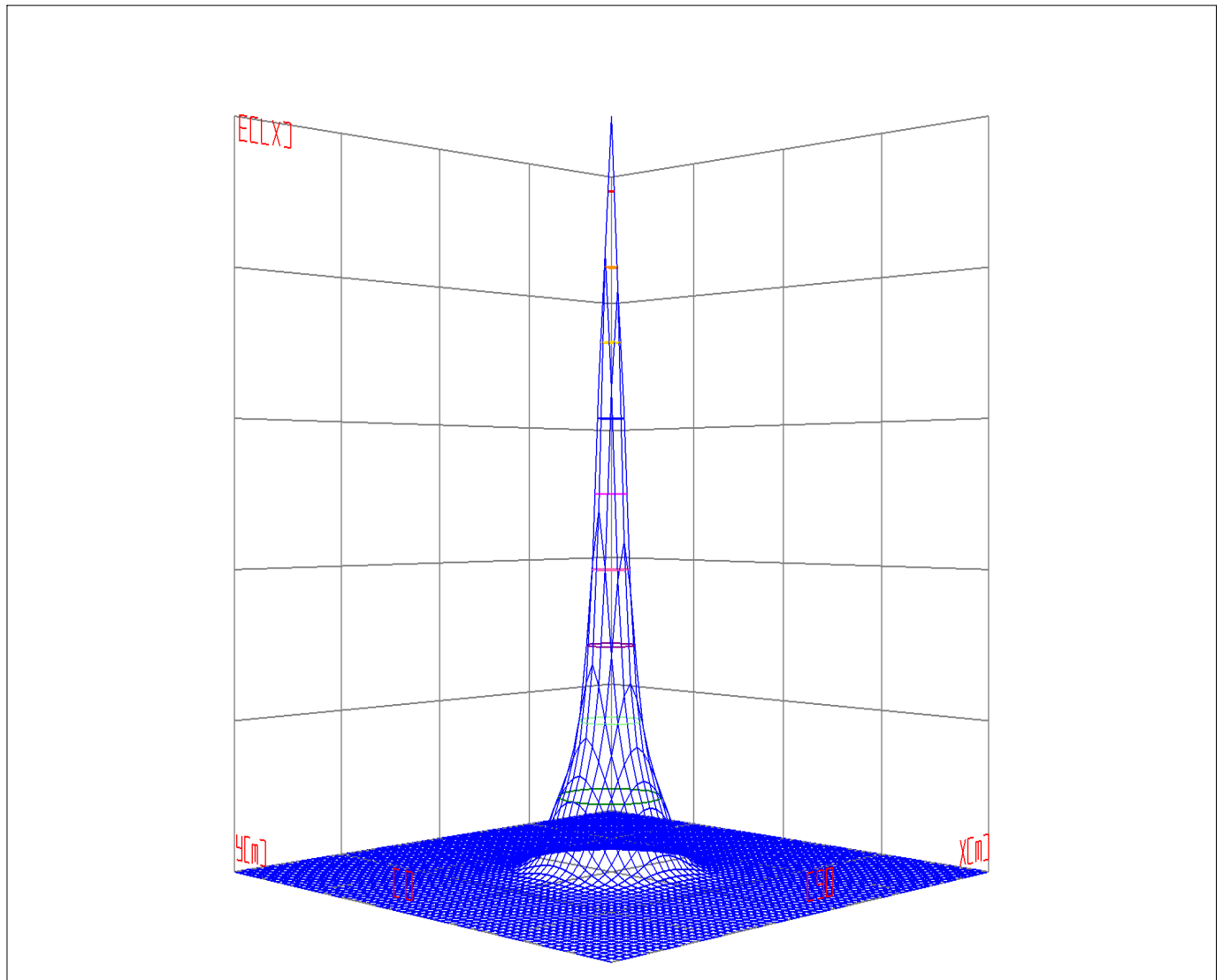


Working Plane Luminaire Mounting Height(m): 3.00
 Working Plane Maximum Illuminance(lx): 282.13
 Working Plane Maximum Illuminance Position(d/h):H0.0 V0.0

3D Plane ISO Illuminance Diagram

| | | |
|---|----------------------------------|-----------------------|
| Lum. Name: DC13W-3500K, Ra90, Reflector 24° | Lum. Catalog: 1300LM | Test ID: 01 |
| Lamp Name: CL2-13MR | Lamp Catalog: lamps and lanterns | Test Lab: |
| LED Chip: Citizen CLU028-1203C4-35XH5M3 | Test Machine:GON-2000 | Test Date: 2017/06/13 |

3D Plane Illuminance Modal

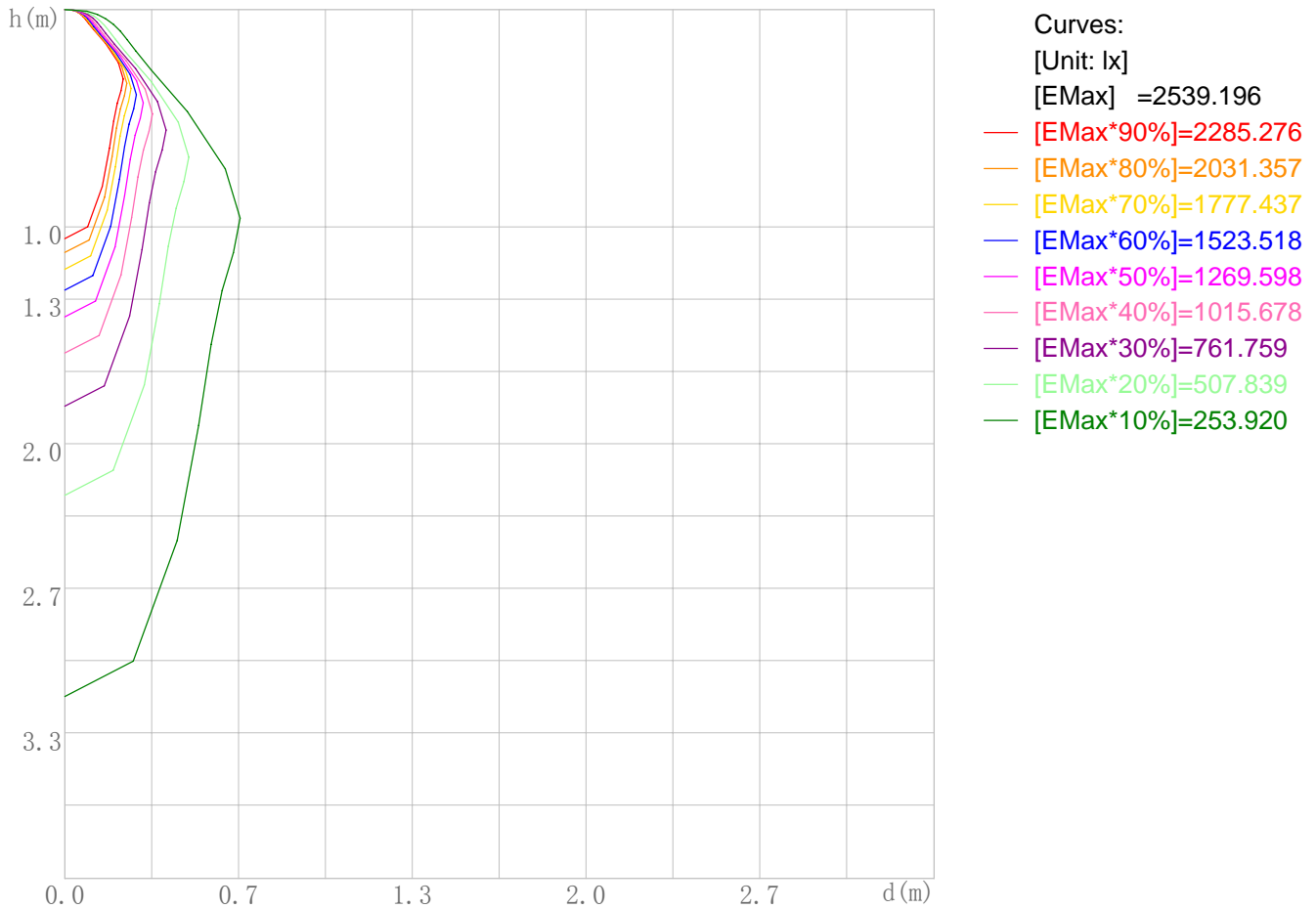


Curves: 3D Model — 90% — 80% — 70% — 60% — 50% — 40% — 30% — 20% — 10% —
 View Angles(deg): 0 Height(m): 3.0 Distance(m): 10.0

Space ISO Illuminance Diagram

| | | |
|---|----------------------------------|-----------------------|
| Lum. Name: DC13W-3500K, Ra90, Reflector 24° | Lum. Catalog: 1300LM | Test ID: 01 |
| Lamp Name: CL2-13MR | Lamp Catalog: lamps and lanterns | Test Lab: |
| LED Chip: Citizen CLU028-1203C4-35XH5M3 | Test Machine:GON-2000 | Test Date: 2017/06/13 |

Space ISO Illuminance Curve

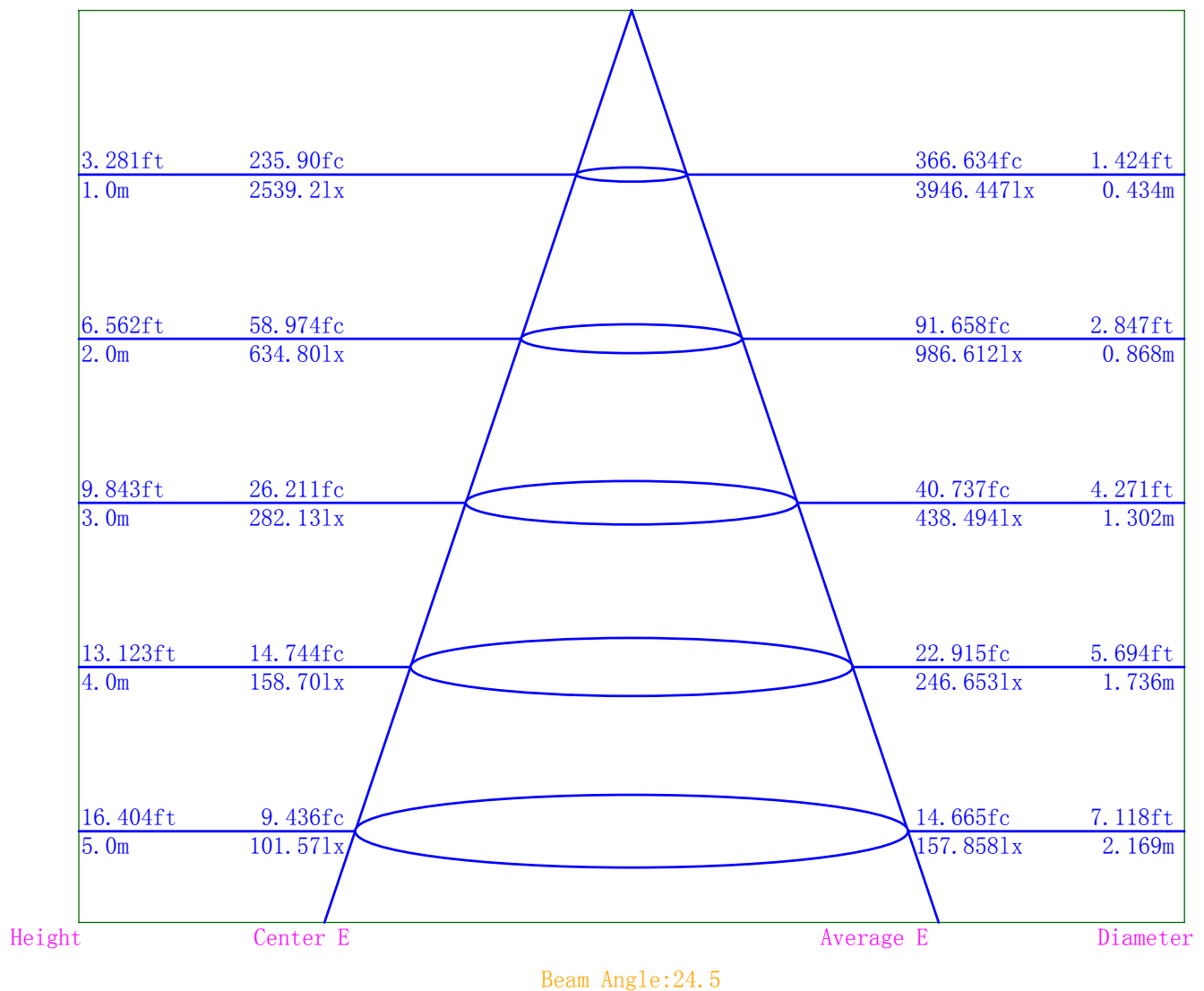


Space Plane Maximum Illuminance and @Angle:2539.20lx,0.0deg
 Plane Maximum Lighting Intensity and @Angle:2539.196cd,0deg

Illuminance-Distance Diagram

| | | |
|---|----------------------------------|-----------------------|
| Lum. Name: DC13W-3500K, Ra90, Reflector 24° | Lum. Catalog: 1300LM | Test ID: 01 |
| Lamp Name: CL2-13MR | Lamp Catalog: lamps and lanterns | Test Lab: |
| LED Chip: Citizen CLU028-1203C4-35XH5M3 | Test Machine:GON-2000 | Test Date: 2017/06/13 |

Illuminance-Distance Curve



Indoor Luminance Limiting Curves

| | | |
|---|----------------------------------|-----------------------|
| Lum. Name: DC13W-3500K, Ra90, Reflector 24° | Lum. Catalog: 1300LM | Test ID: 01 |
| Lamp Name: CL2-13MR | Lamp Catalog: lamps and lanterns | Test Lab: |
| LED Chip: Citizen CLU028-1203C4-35XH5M3 | Test Machine:GON-2000 | Test Date: 2017/06/13 |

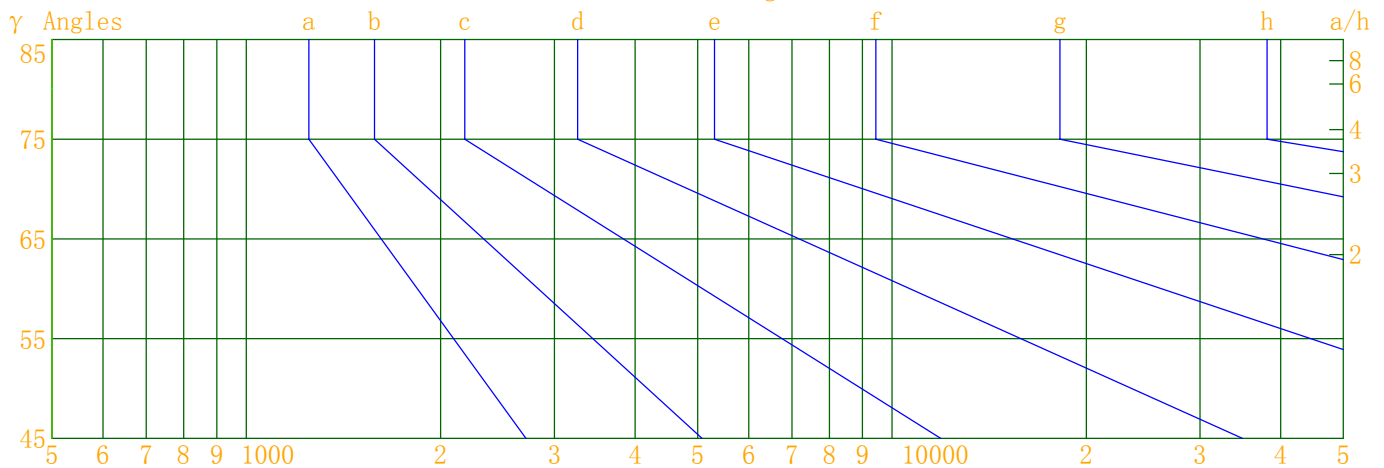
Glare Grade Table

| GI | Quality | Using Illuminance | | | | | | | |
|------|---------|-------------------|------|------|-------|-------|-------|-------|-------|
| | | a | b | c | d | e | f | g | h |
| 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 | a | | | | 2000 | 1000 | 500 | <=300 |
| | | | b | c | d | e | f | g | h |

Luminance Table

| Gama (deg) | 45 | 50 | 55 | 60 | 65 | 70 | 75 | 80 | 85 |
|------------|----|----|----|----|----|----|----|----|----|
| C0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| C90 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

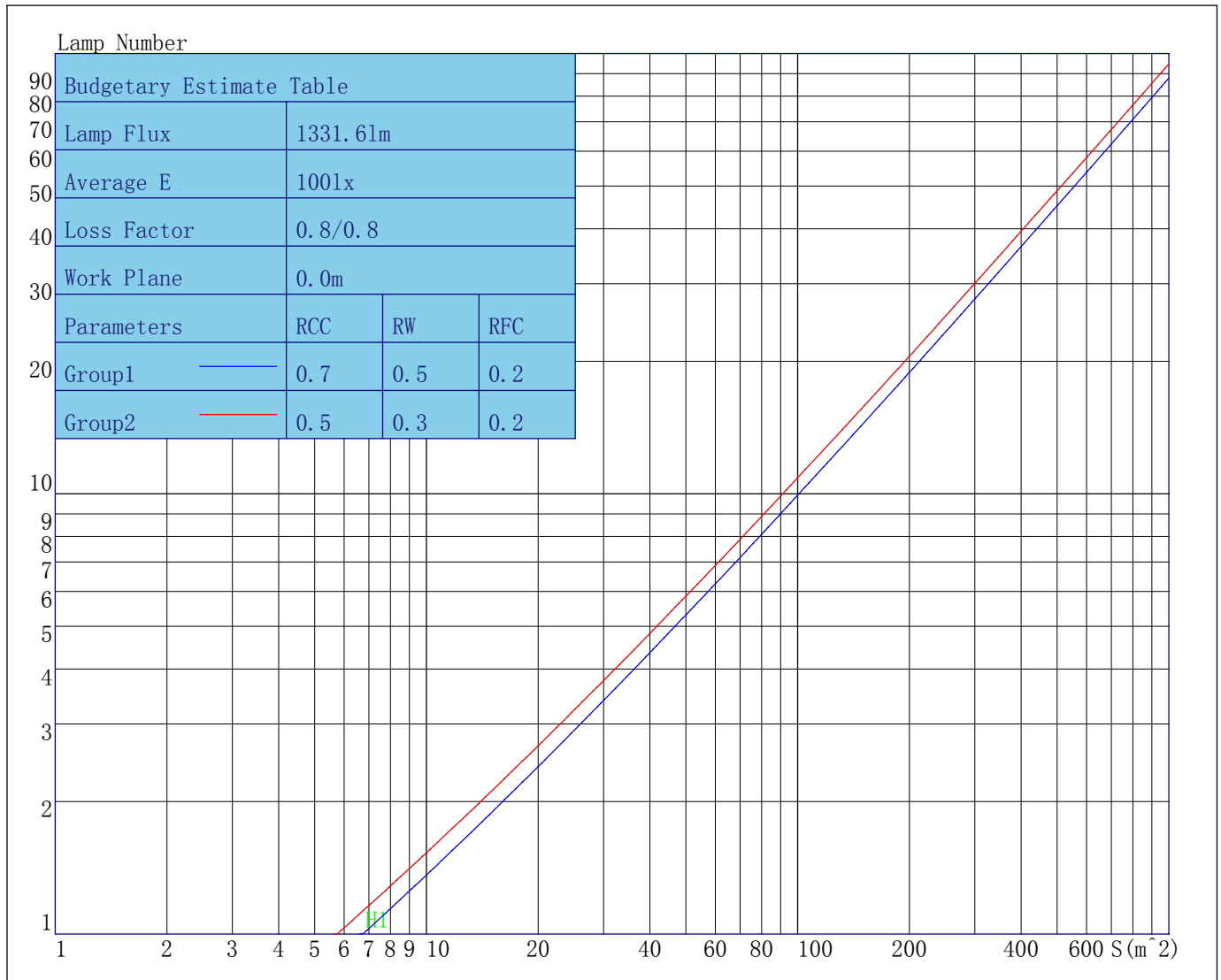
Luminance Limiting Curve



Luminous Size: Length(m)=0.000 Width(m)=0.000 Height(m)=0.000 Area(m^2)=0.000000
 Luminous Type: Without Luminous Side
 Luminous Curves: C0-C180 Color: — C90-C270 Color: —

Indoor Budgetary Estimate Table

| | | |
|---|----------------------------------|-----------------------|
| Lum. Name: DC13W-3500K, Ra90, Reflector 24° | Lum. Catalog: 1300LM | Test ID: 01 |
| Lamp Name: CL2-13MR | Lamp Catalog: lamps and lanterns | Test Lab: |
| LED Chip: Citizen CLU028-1203C4-35XH5M3 | Test Machine:GON-2000 | Test Date: 2017/06/13 |



Parameters1: Rhocc = 0.7 Rhow = 0.5 Rhofc = 0.2 LLF = 0.8
 Parameters2: Rhocc = 0.5 Rhow = 0.3 Rhofc = 0.2 LLF = 0.8
 Average Illuminance(lx): 100 Cavity Height: H1(m) = 2

Indoor Coefficient of Utilization Table

| | | |
|---|----------------------------------|-----------------------|
| Lum. Name: DC13W-3500K, Ra90, Reflector 24° | Lum. Catalog: 1300LM | Test ID: 01 |
| Lamp Name: CL2-13MR | Lamp Catalog: lamps and lanterns | Test Lab: |
| LED Chip: Citizen CLU028-1203C4-35XH5M3 | Test Machine:GON-2000 | Test Date: 2017/06/13 |

| Coefficients of Utilization - Zonal Cavity Method | | | | | | | | | | | | | | | | | | |
|---|---|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|----|----|----|----|
| Coef. | Effective Floor Cavity Reflectance RFC=0.20 | | | | | | | | | | | | | | | | | |
| RhoCC (%) | 80 | | | | 70 | | | | 50 | | | 30 | | | 10 | | | 0 |
| RhoW (%) | 70 | 50 | 30 | 10 | 70 | 50 | 30 | 10 | 50 | 30 | 10 | 50 | 30 | 10 | 50 | 30 | 10 | 0 |
| RCR | Coefficient of Utilization (%) | | | | | | | | | | | | | | | | | |
| 0 | 124 | 124 | 124 | 124 | 120 | 120 | 120 | 120 | 112 | 112 | 112 | 106 | 106 | 106 | 99 | 99 | 99 | 96 |
| 1 | 116 | 113 | 109 | 106 | 113 | 109 | 106 | 104 | 103 | 101 | 99 | 98 | 96 | 94 | 93 | 91 | 90 | 87 |
| 2 | 109 | 103 | 98 | 94 | 106 | 101 | 96 | 92 | 96 | 92 | 89 | 91 | 88 | 85 | 87 | 84 | 82 | 80 |
| 3 | 103 | 95 | 89 | 84 | 100 | 93 | 87 | 83 | 89 | 84 | 80 | 85 | 81 | 78 | 81 | 78 | 76 | 73 |
| 4 | 97 | 88 | 82 | 77 | 94 | 86 | 80 | 76 | 83 | 78 | 74 | 79 | 75 | 72 | 76 | 73 | 70 | 68 |
| 5 | 92 | 82 | 75 | 70 | 89 | 80 | 74 | 69 | 77 | 72 | 68 | 75 | 70 | 66 | 72 | 68 | 65 | 63 |
| 6 | 87 | 77 | 70 | 65 | 85 | 75 | 69 | 64 | 73 | 67 | 63 | 70 | 65 | 62 | 68 | 64 | 61 | 59 |
| 7 | 83 | 72 | 65 | 60 | 80 | 71 | 64 | 60 | 68 | 63 | 59 | 66 | 61 | 58 | 64 | 60 | 57 | 55 |
| 8 | 78 | 68 | 61 | 56 | 77 | 67 | 60 | 56 | 65 | 59 | 55 | 63 | 58 | 54 | 61 | 57 | 53 | 52 |
| 9 | 75 | 64 | 57 | 53 | 73 | 63 | 57 | 53 | 61 | 56 | 52 | 60 | 55 | 51 | 58 | 54 | 51 | 49 |
| 10 | 71 | 61 | 54 | 50 | 70 | 60 | 54 | 50 | 58 | 53 | 49 | 57 | 52 | 48 | 55 | 51 | 48 | 46 |

IES Indoor Report

Photometric Filename:DC13W-3500K, Ra90, Reflector 24°.IES

Unified Glare Rating Table

| | | |
|---|----------------------------------|-----------------------|
| Lum. Name: DC13W-3500K, Ra90, Reflector 24° | Lum. Catalog: 1300LM | Test ID: 01 |
| Lamp Name: CL2-13MR | Lamp Catalog: lamps and lanterns | Test Lab: |
| LED Chip: Citizen CLU028-1203C4-35XH5M3 | Test Machine:GON-2000 | Test Date: 2017/06/13 |

Unified Glare Rating Table

| | | | | | | | | | | |
|---|------------------|------|------|------|------|----------------|------|------|------|------|
| Ceiling RCC | 0.70 | 0.70 | 0.50 | 0.50 | 0.30 | 0.70 | 0.70 | 0.50 | 0.50 | 0.30 |
| Wall RW | 0.50 | 0.30 | 0.50 | 0.30 | 0.30 | 0.50 | 0.30 | 0.50 | 0.30 | 0.30 |
| Floor RFC | 0.20 | 0.20 | 0.20 | 0.20 | 0.20 | 0.20 | 0.20 | 0.20 | 0.20 | 0.20 |
| Room Size | Viewed crosswise | | | | | Viewed endwise | | | | |
| X=2H Y=2H | -0.8 | 0.3 | -0.3 | 0.8 | 1.3 | -0.8 | 0.3 | -0.3 | 0.8 | 1.3 |
| Y=3H | -1.0 | 0.0 | -0.5 | 0.5 | 1.1 | -1.0 | 0.0 | -0.5 | 0.5 | 1.1 |
| Y=4H | -1.1 | -0.1 | -0.5 | 0.4 | 1.0 | -1.1 | -0.1 | -0.5 | 0.4 | 1.0 |
| Y=6H | -1.2 | -0.3 | -0.6 | 0.2 | 0.8 | -1.2 | -0.3 | -0.6 | 0.2 | 0.8 |
| Y=8H | -1.3 | -0.4 | -0.7 | 0.1 | 0.8 | -1.3 | -0.4 | -0.7 | 0.1 | 0.8 |
| Y=12H | -1.3 | -0.5 | -0.7 | 0.1 | 0.7 | -1.3 | -0.5 | -0.7 | 0.1 | 0.7 |
| X=4H Y=2H | -1.1 | -0.1 | -0.5 | 0.4 | 1.0 | -1.1 | -0.1 | -0.5 | 0.4 | 1.0 |
| Y=3H | -1.3 | -0.5 | -0.7 | 0.1 | 0.7 | -1.3 | -0.5 | -0.7 | 0.1 | 0.7 |
| Y=4H | -1.4 | -0.7 | -0.8 | -0.1 | 0.6 | -1.4 | -0.7 | -0.8 | -0.1 | 0.6 |
| Y=6H | -1.5 | -0.9 | -0.9 | -0.3 | 0.4 | -1.5 | -0.9 | -0.9 | -0.3 | 0.4 |
| Y=8H | -1.6 | -1.0 | -1.0 | -0.4 | 0.3 | -1.6 | -1.0 | -1.0 | -0.4 | 0.3 |
| Y=12H | -1.6 | -1.1 | -1.0 | -0.4 | 0.2 | -1.6 | -1.1 | -1.0 | -0.4 | 0.2 |
| X=8H Y=4H | -1.6 | -1.0 | -1.0 | -0.4 | 0.3 | -1.6 | -1.0 | -1.0 | -0.4 | 0.3 |
| Y=6H | -1.7 | -1.2 | -1.1 | -0.5 | 0.2 | -1.7 | -1.2 | -1.1 | -0.5 | 0.2 |
| Y=8H | -1.8 | -1.3 | -1.1 | -0.6 | 0.1 | -1.8 | -1.3 | -1.1 | -0.6 | 0.1 |
| Y=12H | -1.8 | -1.4 | -1.2 | -0.7 | 0.0 | -1.8 | -1.4 | -1.2 | -0.7 | 0.0 |
| X=12H Y=4H | -1.6 | -1.1 | -1.0 | -0.4 | 0.2 | -1.6 | -1.1 | -1.0 | -0.4 | 0.2 |
| Y=6H | -1.8 | -1.3 | -1.1 | -0.7 | 0.1 | -1.8 | -1.3 | -1.1 | -0.7 | 0.1 |
| Y=8H | -1.8 | -1.4 | -1.2 | -0.7 | 0.0 | -1.8 | -1.4 | -1.2 | -0.7 | 0.0 |
| Variations with the observer position at spacings | | | | | | | | | | |
| S=1.0H | 0.0/0.0 | | | | | 0.0/0.0 | | | | |
| S=1.5H | 0.0/0.0 | | | | | 0.0/0.0 | | | | |
| S=2.0H | 0.0/0.0 | | | | | 0.0/0.0 | | | | |
| Reduced UGR Table: | | | | | | | | | | |
| Nordic Standard Table: | BKO | | | | | BKO | | | | |
| Correction Value | 0.0 | | | | | 0.0 | | | | |

to the CIE Pub.117, data has been corrected, refers to the lamp's lumens 8.2flm.

Candela Tabulation

| V/H | C0.0 | C90.0 | C180.0 | C270.0 |
|---------|---------|---------|---------|---------|
| γ 0.0 | 2539.20 | 2539.20 | 2539.20 | 2539.20 |
| γ 5.0 | 2311.16 | 2193.18 | 2177.78 | 2251.16 |
| γ 10.0 | 1587.08 | 1461.83 | 1439.08 | 1546.09 |
| γ 15.0 | 1032.53 | 933.29 | 915.35 | 993.59 |
| γ 20.0 | 726.77 | 665.01 | 654.07 | 701.33 |
| γ 25.0 | 570.64 | 536.37 | 526.41 | 553.47 |
| γ 30.0 | 489.71 | 465.22 | 454.61 | 478.45 |
| γ 35.0 | 425.87 | 386.81 | 371.27 | 414.28 |
| γ 40.0 | 303.62 | 246.58 | 236.85 | 292.37 |
| γ 45.0 | 158.44 | 119.41 | 113.90 | 145.87 |
| γ 50.0 | 73.55 | 64.26 | 59.63 | 67.65 |
| γ 55.0 | 48.96 | 44.57 | 42.46 | 46.08 |
| γ 60.0 | 38.72 | 35.45 | 33.64 | 35.96 |
| γ 65.0 | 33.20 | 30.24 | 28.97 | 30.94 |
| γ 70.0 | 29.17 | 26.82 | 26.14 | 27.54 |
| γ 75.0 | 26.08 | 24.15 | 23.87 | 25.18 |
| γ 80.0 | 23.48 | 21.89 | 21.81 | 23.04 |
| γ 85.0 | 21.12 | 20.01 | 20.01 | 20.98 |
| γ 90.0 | 19.32 | 18.72 | 18.83 | 19.39 |
| γ 95.0 | 18.78 | 18.27 | 18.32 | 18.79 |
| γ 100.0 | 18.34 | 17.98 | 18.00 | 18.38 |
| γ 105.0 | 18.20 | 17.84 | 17.84 | 18.18 |
| γ 110.0 | 17.97 | 17.78 | 17.85 | 18.06 |
| γ 115.0 | 17.97 | 17.90 | 18.00 | 18.16 |
| γ 120.0 | 18.01 | 17.94 | 18.22 | 18.28 |
| γ 125.0 | 18.22 | 18.19 | 18.54 | 18.58 |
| γ 130.0 | 18.57 | 18.63 | 18.94 | 18.97 |
| γ 135.0 | 19.03 | 19.14 | 19.59 | 19.48 |
| γ 140.0 | 19.79 | 19.86 | 20.33 | 20.25 |
| γ 145.0 | 20.56 | 20.57 | 21.09 | 20.94 |
| γ 150.0 | 21.21 | 21.25 | 21.72 | 21.62 |
| γ 155.0 | 21.81 | 21.81 | 22.17 | 22.09 |
| γ 160.0 | 22.36 | 22.32 | 22.61 | 22.43 |
| γ 165.0 | 22.78 | 22.73 | 22.99 | 22.87 |
| γ 170.0 | 23.11 | 22.97 | 23.30 | 23.12 |
| γ 175.0 | 23.34 | 23.25 | 23.44 | 23.27 |
| γ 180.0 | 23.47 | 23.47 | 23.47 | 23.47 |
