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# Indoor Luminaire Photometric Data

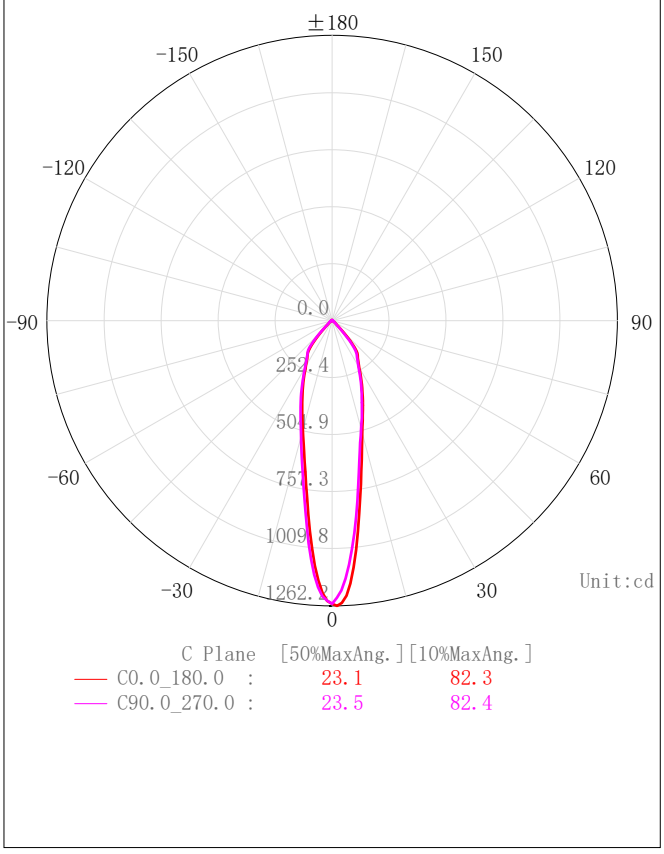
## Description Information

| | | | |
|---|---|---|---|
| Luminary Name: HCP-809024-4000K RA90 28D | | Lum. Catelog: | Test ID: 01 |
| Lamp Name: | | Lamp Catelog: LED | Test Date: 2020/09/22 |
| Manufacture: Havit Commercial | | Shld.Ang(° ): | Test Machine:GON-2000 |
| Test Lab: Quality Department | | Frequency(Hz): | Lamp CCT(K): Ra: |
| Lum.Size(W*L*H):0.050m*0.000m*0.080m | | Lum.Area(m2):0.016 | Lum.W(kg): 0.000 |
| Test System: C,γ | Test Step: C=90.0 γ=1.0 | Temp.(℃): 25 | Humidity(%): 50.0 |

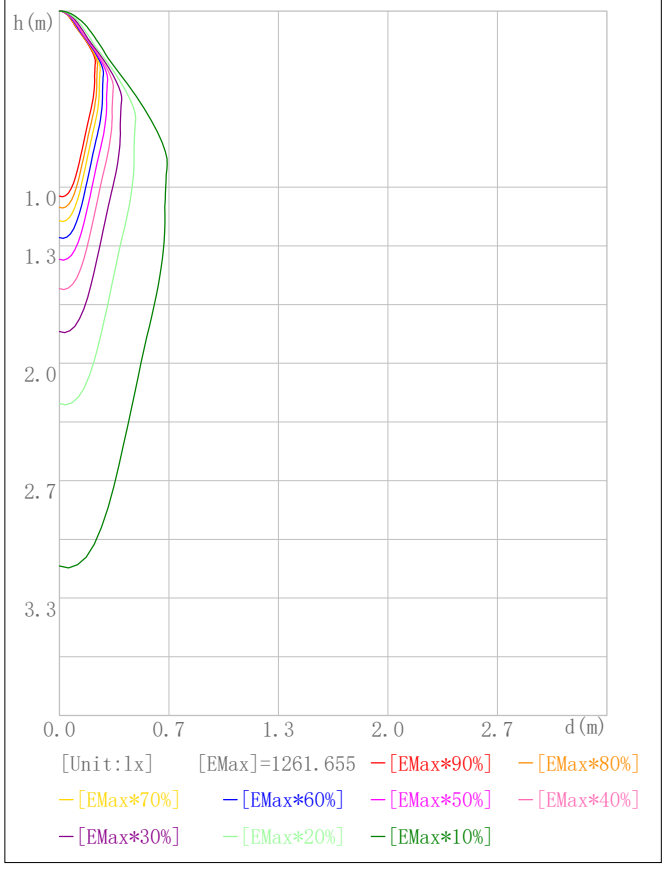
## Character Parameter

| Lamp Speciality Parameter | Luminaire Speciality Parameter | |
|---|---|---|
| Rated Flux(lm): 572.460 | Luminary Flux(lm): 572.465 | Field Angle(10%Imax): 82.3(° ) |
| Rated Power(W): | Luminary Efficiency: 100.00% | Down Lumens&Percent: 569.1431m 99.42% |
| Rated Voltage(V): | Luminary EER(lm/W): 65.635 | Up Lumens&Percent: 3.3221m 0.58% |
| Tested Power(W): 8.722 | Max.Candela(cd): 1262.232 | S/MH: C0_a180=0.385 C90_270=0.387 |
| Lamps' Inside: 1 | Max Cand@Ang.(° ): C=0.0 γ=1.0 | CIE Type: Semi-Direct |
| Tested Electrics(V,A,pf):240.0,0.039,0.910 | Beam Angle(50%Imax): 23.1(° ) | ErP Φuse(90° ): 525.418lm |
| Lamp Size(W*L*H):0.050m*0.000m*0.080m | Left=-11.1° ,Right=12.0° | IRF(%): 470.943 |

## C Plane Distribution Diagram




## C0 Space ISO Illuminance Curve



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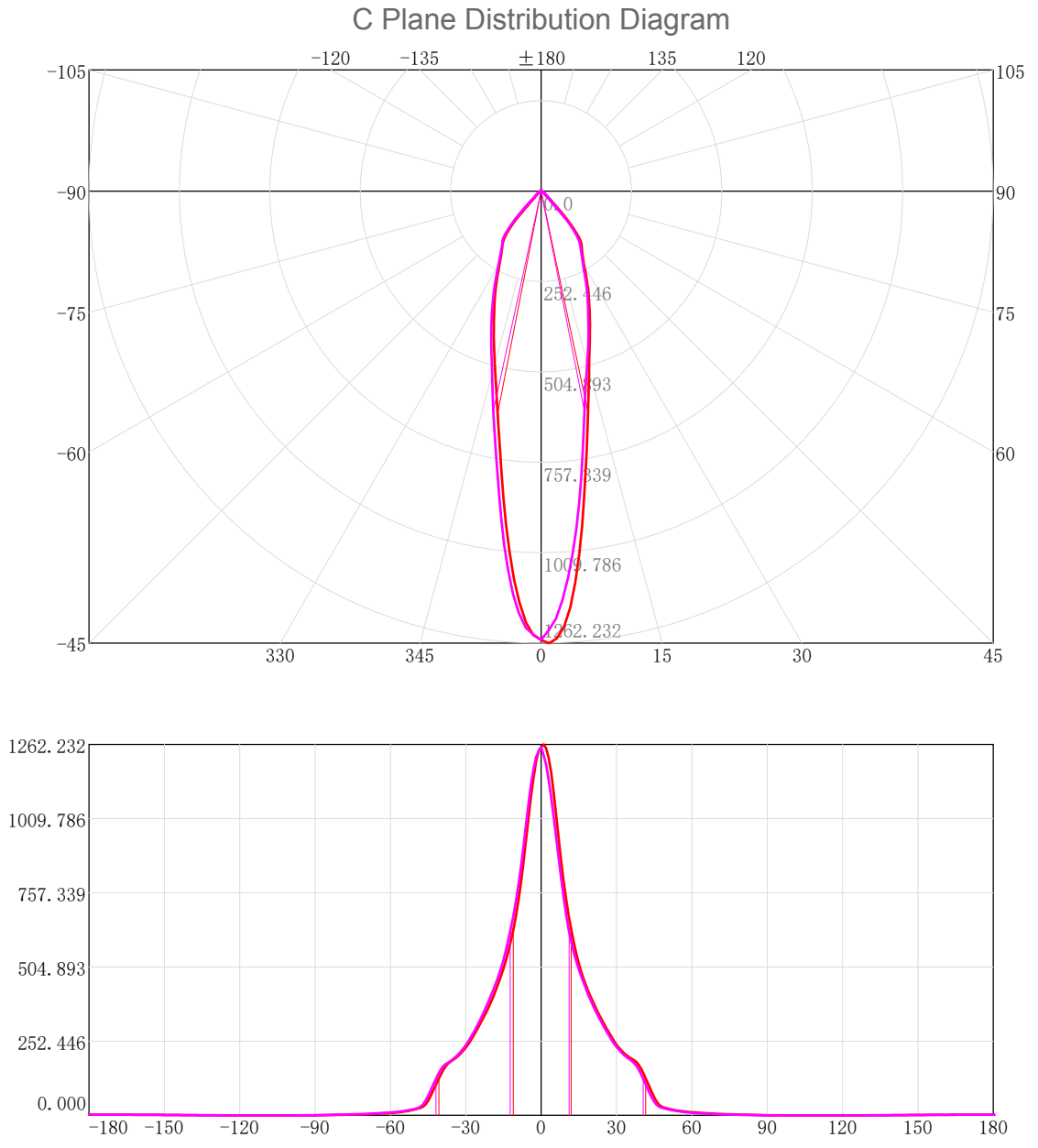
# 2D Plane Light Intensity Distribution Curve

| | | |
|---|---|---|
| Lum.Name: HCP-809024-4000K RA90 28D | Lum.Catelog: | Test ID: 01 |
| Lamp Name: | Lamp Catelog: LED | Test Lab: Quality Department |
| Manufacture: Havit Commercial | Test Machine:GON-2000 | Test Date: 2020/09/22 |



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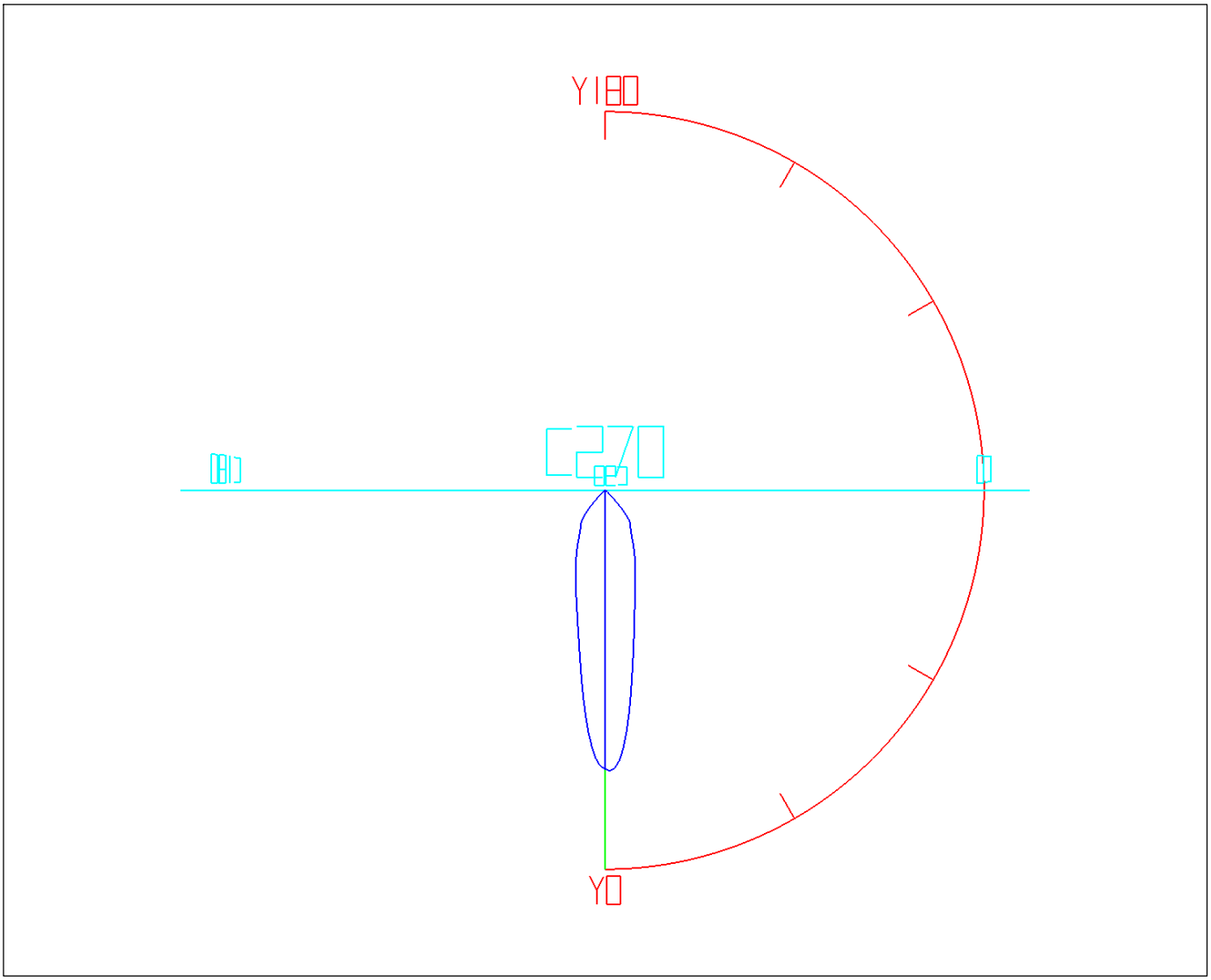
# 3D Light Intensity Distribution Modal

| | | |
|---|---|---|
| Lum.Name: HCP-809024-4000K RA90 28D | Lum.Catelog: | Test ID: 01 |
| Lamp Name: | Lamp Catelog: LED | Test Lab: Quality Department |
| Manufacture: Havit Commercial | Test Machine:GON-2000 | Test Date: 2020/09/22 |

3D Light Intensity Distribution Modal




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

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# Zonal Flux Tabulation

| Zone(γ) | Zone Flux (lm) | Sums Flux (lm) | Zone%Lamp | Sums%Lamp | Zone(γ) | Zone Flux (lm) | Sums Flux (lm) | Zone%Lamp | Sums%Lamp |
|---|---|---|---|---|---|---|---|---|---|
| 0.0-1.0 | 1.19 | 1.19 | 0.21 | 0.21 | 47.0-48.0 | 2.47 | 539.81 | 0.43 | 94.30 |
| 1.0-2.0 | 3.53 | 4.72 | 0.62 | 0.82 | 48.0-49.0 | 2.17 | 541.98 | 0.38 | 94.68 |
| 2.0-3.0 | 5.72 | 10.44 | 1.00 | 1.82 | 49.0-50.0 | 1.98 | 543.96 | 0.35 | 95.02 |
| 3.0-4.0 | 7.66 | 18.10 | 1.34 | 3.16 | 50.0-51.0 | 1.83 | 545.78 | 0.32 | 95.34 |
| 4.0-5.0 | 9.29 | 27.39 | 1.62 | 4.78 | 51.0-52.0 | 1.68 | 547.46 | 0.29 | 95.63 |
| 5.0-6.0 | 10.61 | 38.00 | 1.85 | 6.64 | 52.0-53.0 | 1.54 | 549.00 | 0.27 | 95.90 |
| 6.0-7.0 | 11.62 | 49.61 | 2.03 | 8.67 | 53.0-54.0 | 1.42 | 550.42 | 0.25 | 96.15 |
| 7.0-8.0 | 12.35 | 61.97 | 2.16 | 10.82 | 54.0-55.0 | 1.32 | 551.74 | 0.23 | 96.38 |
| 8.0-9.0 | 12.89 | 74.86 | 2.25 | 13.08 | 55.0-56.0 | 1.23 | 552.97 | 0.21 | 96.59 |
| 9.0-10.0 | 13.31 | 88.17 | 2.32 | 15.40 | 56.0-57.0 | 1.14 | 554.11 | 0.20 | 96.79 |
| 10.0-11.0 | 13.63 | 101.80 | 2.38 | 17.78 | 57.0-58.0 | 1.07 | 555.18 | 0.19 | 96.98 |
| 11.0-12.0 | 13.89 | 115.69 | 2.43 | 20.21 | 58.0-59.0 | 1.00 | 556.18 | 0.18 | 97.16 |
| 12.0-13.0 | 14.11 | 129.80 | 2.46 | 22.67 | 59.0-60.0 | 0.94 | 557.12 | 0.16 | 97.32 |
| 13.0-14.0 | 14.29 | 144.08 | 2.50 | 25.17 | 60.0-61.0 | 0.89 | 558.01 | 0.15 | 97.48 |
| 14.0-15.0 | 14.43 | 158.51 | 2.52 | 27.69 | 61.0-62.0 | 0.84 | 558.85 | 0.15 | 97.62 |
| 15.0-16.0 | 14.56 | 173.07 | 2.54 | 30.23 | 62.0-63.0 | 0.80 | 559.65 | 0.14 | 97.76 |
| 16.0-17.0 | 14.68 | 187.75 | 2.56 | 32.80 | 63.0-64.0 | 0.76 | 560.41 | 0.13 | 97.89 |
| 17.0-18.0 | 14.77 | 202.52 | 2.58 | 35.38 | 64.0-65.0 | 0.71 | 561.12 | 0.12 | 98.02 |
| 18.0-19.0 | 14.80 | 217.32 | 2.59 | 37.96 | 65.0-66.0 | 0.67 | 561.79 | 0.12 | 98.14 |
| 19.0-20.0 | 14.79 | 232.12 | 2.58 | 40.55 | 66.0-67.0 | 0.63 | 562.42 | 0.11 | 98.25 |
| 20.0-21.0 | 14.76 | 246.88 | 2.58 | 43.13 | 67.0-68.0 | 0.58 | 562.99 | 0.10 | 98.35 |
| 21.0-22.0 | 14.69 | 261.57 | 2.57 | 45.69 | 68.0-69.0 | 0.53 | 563.53 | 0.09 | 98.44 |
| 22.0-23.0 | 14.60 | 276.17 | 2.55 | 48.24 | 69.0-70.0 | 0.49 | 564.02 | 0.09 | 98.53 |
| 23.0-24.0 | 14.48 | 290.65 | 2.53 | 50.77 | 70.0-71.0 | 0.46 | 564.48 | 0.08 | 98.61 |
| 24.0-25.0 | 14.32 | 304.97 | 2.50 | 53.27 | 71.0-72.0 | 0.44 | 564.92 | 0.08 | 98.68 |
| 25.0-26.0 | 14.12 | 319.09 | 2.47 | 55.74 | 72.0-73.0 | 0.41 | 565.33 | 0.07 | 98.75 |
| 26.0-27.0 | 13.88 | 332.97 | 2.42 | 58.16 | 73.0-74.0 | 0.39 | 565.72 | 0.07 | 98.82 |
| 27.0-28.0 | 13.61 | 346.58 | 2.38 | 60.54 | 74.0-75.0 | 0.37 | 566.09 | 0.06 | 98.89 |
| 28.0-29.0 | 13.32 | 359.90 | 2.33 | 62.87 | 75.0-76.0 | 0.35 | 566.43 | 0.06 | 98.95 |
| 29.0-30.0 | 13.05 | 372.95 | 2.28 | 65.15 | 76.0-77.0 | 0.32 | 566.76 | 0.06 | 99.00 |
| 30.0-31.0 | 12.83 | 385.78 | 2.24 | 67.39 | 77.0-78.0 | 0.30 | 567.06 | 0.05 | 99.06 |
| 31.0-32.0 | 12.64 | 398.42 | 2.21 | 69.60 | 78.0-79.0 | 0.28 | 567.34 | 0.05 | 99.11 |
| 32.0-33.0 | 12.46 | 410.88 | 2.18 | 71.77 | 79.0-80.0 | 0.26 | 567.61 | 0.05 | 99.15 |
| 33.0-34.0 | 12.31 | 423.18 | 2.15 | 73.92 | 80.0-81.0 | 0.24 | 567.85 | 0.04 | 99.19 |
| 34.0-35.0 | 12.18 | 435.36 | 2.13 | 76.05 | 81.0-82.0 | 0.22 | 568.07 | 0.04 | 99.23 |
| 35.0-36.0 | 12.08 | 447.44 | 2.11 | 78.16 | 82.0-83.0 | 0.20 | 568.27 | 0.04 | 99.27 |
| 36.0-37.0 | 11.98 | 459.43 | 2.09 | 80.25 | 83.0-84.0 | 0.19 | 568.46 | 0.03 | 99.30 |
| 37.0-38.0 | 11.79 | 471.22 | 2.06 | 82.31 | 84.0-85.0 | 0.17 | 568.63 | 0.03 | 99.33 |
| 38.0-39.0 | 11.40 | 482.62 | 1.99 | 84.31 | 85.0-86.0 | 0.15 | 568.78 | 0.03 | 99.36 |
| 39.0-40.0 | 10.74 | 493.36 | 1.88 | 86.18 | 86.0-87.0 | 0.13 | 568.91 | 0.02 | 99.38 |
| 40.0-41.0 | 9.82 | 503.17 | 1.71 | 87.90 | 87.0-88.0 | 0.10 | 569.01 | 0.02 | 99.40 |
| 41.0-42.0 | 8.70 | 511.87 | 1.52 | 89.42 | 88.0-89.0 | 0.08 | 569.09 | 0.01 | 99.41 |
| 42.0-43.0 | 7.47 | 519.34 | 1.31 | 90.72 | 89.0-90.0 | 0.05 | 569.14 | 0.01 | 99.42 |
| 43.0-44.0 | 6.19 | 525.53 | 1.08 | 91.80 | 90.0-91.0 | 0.04 | 569.19 | 0.01 | 99.43 |
| 44.0-45.0 | 4.94 | 530.47 | 0.86 | 92.67 | 91.0-92.0 | 0.04 | 569.22 | 0.01 | 99.43 |
| 45.0-46.0 | 3.85 | 534.32 | 0.67 | 93.34 | 92.0-93.0 | 0.03 | 569.25 | 0.01 | 99.44 |
| 46.0-47.0 | 3.01 | 537.33 | 0.53 | 93.86 | 93.0-94.0 | 0.03 | 569.28 | 0.00 | 99.44 |

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# Zonal Flux Tabulation - (Cont.)

| Zone(γ) | Zone Flux (lm) | Sums Flux (lm) | Zone%Lamp | Sums%Lamp |
|---|---|---|---|---|
| 94.0-95.0 | 0.02 | 569.30 | 0.00 | 99.45 |
| 95.0-96.0 | 0.02 | 569.32 | 0.00 | 99.45 |
| 96.0-97.0 | 0.02 | 569.33 | 0.00 | 99.45 |
| 97.0-98.0 | 0.01 | 569.35 | 0.00 | 99.46 |
| 98.0-99.0 | 0.01 | 569.36 | 0.00 | 99.46 |
| 99.0-100.0 | 0.01 | 569.37 | 0.00 | 99.46 |
| 100.0-101.0 | 0.01 | 569.37 | 0.00 | 99.46 |
| 101.0-102.0 | 0.00 | 569.38 | 0.00 | 99.46 |
| 102.0-103.0 | 0.00 | 569.38 | 0.00 | 99.46 |
| 103.0-104.0 | 0.00 | 569.38 | 0.00 | 99.46 |
| 104.0-105.0 | 0.00 | 569.38 | 0.00 | 99.46 |
| 105.0-106.0 | 0.00 | 569.38 | 0.00 | 99.46 |
| 106.0-107.0 | 0.00 | 569.38 | 0.00 | 99.46 |
| 107.0-108.0 | 0.00 | 569.38 | 0.00 | 99.46 |
| 108.0-109.0 | 0.00 | 569.38 | 0.00 | 99.46 |
| 109.0-110.0 | 0.00 | 569.38 | 0.00 | 99.46 |
| 110.0-111.0 | 0.00 | 569.38 | 0.00 | 99.46 |
| 111.0-112.0 | 0.00 | 569.38 | 0.00 | 99.46 |
| 112.0-113.0 | 0.00 | 569.38 | 0.00 | 99.46 |
| 113.0-114.0 | 0.00 | 569.38 | 0.00 | 99.46 |
| 114.0-115.0 | 0.00 | 569.38 | 0.00 | 99.46 |
| 115.0-116.0 | 0.00 | 569.38 | 0.00 | 99.46 |
| 116.0-117.0 | 0.00 | 569.38 | 0.00 | 99.46 |
| 117.0-118.0 | 0.00 | 569.38 | 0.00 | 99.46 |
| 118.0-119.0 | 0.00 | 569.38 | 0.00 | 99.46 |
| 119.0-120.0 | 0.00 | 569.38 | 0.00 | 99.46 |
| 120.0-121.0 | 0.00 | 569.39 | 0.00 | 99.46 |
| 121.0-122.0 | 0.00 | 569.39 | 0.00 | 99.46 |
| 122.0-123.0 | 0.00 | 569.39 | 0.00 | 99.46 |
| 123.0-124.0 | 0.00 | 569.39 | 0.00 | 99.46 |
| 124.0-125.0 | 0.01 | 569.40 | 0.00 | 99.47 |
| 125.0-126.0 | 0.01 | 569.41 | 0.00 | 99.47 |
| 126.0-127.0 | 0.01 | 569.42 | 0.00 | 99.47 |
| 127.0-128.0 | 0.01 | 569.43 | 0.00 | 99.47 |
| 128.0-129.0 | 0.02 | 569.45 | 0.00 | 99.47 |
| 129.0-130.0 | 0.02 | 569.47 | 0.00 | 99.48 |
| 130.0-131.0 | 0.02 | 569.49 | 0.00 | 99.48 |
| 131.0-132.0 | 0.03 | 569.52 | 0.00 | 99.49 |
| 132.0-133.0 | 0.03 | 569.55 | 0.01 | 99.49 |
| 133.0-134.0 | 0.04 | 569.59 | 0.01 | 99.50 |
| 134.0-135.0 | 0.04 | 569.63 | 0.01 | 99.51 |
| 135.0-136.0 | 0.05 | 569.68 | 0.01 | 99.51 |
| 136.0-137.0 | 0.05 | 569.73 | 0.01 | 99.52 |
| 137.0-138.0 | 0.05 | 569.78 | 0.01 | 99.53 |
| 138.0-139.0 | 0.06 | 569.84 | 0.01 | 99.54 |
| 139.0-140.0 | 0.06 | 569.90 | 0.01 | 99.55 |
| 140.0-141.0 | 0.07 | 569.97 | 0.01 | 99.56 |
| 141.0-142.0 | 0.07 | 570.04 | 0.01 | 99.58 |
| 142.0-143.0 | 0.07 | 570.11 | 0.01 | 99.59 |
| 143.0-144.0 | 0.08 | 570.19 | 0.01 | 99.60 |
| 144.0-145.0 | 0.08 | 570.27 | 0.01 | 99.62 |
| 145.0-146.0 | 0.08 | 570.35 | 0.01 | 99.63 |
| 146.0-147.0 | 0.08 | 570.44 | 0.01 | 99.65 |
| 147.0-148.0 | 0.09 | 570.52 | 0.02 | 99.66 |
| 148.0-149.0 | 0.09 | 570.61 | 0.02 | 99.68 |
| 149.0-150.0 | 0.09 | 570.70 | 0.02 | 99.69 |
| 150.0-151.0 | 0.09 | 570.79 | 0.02 | 99.71 |
| 151.0-152.0 | 0.09 | 570.88 | 0.02 | 99.72 |
| 152.0-153.0 | 0.09 | 570.96 | 0.02 | 99.74 |
| 153.0-154.0 | 0.09 | 571.05 | 0.02 | 99.75 |
| 154.0-155.0 | 0.09 | 571.14 | 0.02 | 99.77 |
| 155.0-156.0 | 0.09 | 571.23 | 0.02 | 99.78 |
| 156.0-157.0 | 0.09 | 571.31 | 0.02 | 99.80 |
| 157.0-158.0 | 0.08 | 571.40 | 0.01 | 99.81 |
| 158.0-159.0 | 0.08 | 571.48 | 0.01 | 99.83 |
| 159.0-160.0 | 0.08 | 571.56 | 0.01 | 99.84 |
| 160.0-161.0 | 0.08 | 571.64 | 0.01 | 99.86 |
| 161.0-162.0 | 0.08 | 571.72 | 0.01 | 99.87 |
| 162.0-163.0 | 0.07 | 571.79 | 0.01 | 99.88 |
| 163.0-164.0 | 0.07 | 571.86 | 0.01 | 99.90 |
| 164.0-165.0 | 0.07 | 571.93 | 0.01 | 99.91 |
| 165.0-166.0 | 0.06 | 572.00 | 0.01 | 99.92 |
| 166.0-167.0 | 0.06 | 572.06 | 0.01 | 99.93 |
| 167.0-168.0 | 0.06 | 572.11 | 0.01 | 99.94 |
| 168.0-169.0 | 0.05 | 572.17 | 0.01 | 99.95 |
| 169.0-170.0 | 0.05 | 572.22 | 0.01 | 99.96 |
| 170.0-171.0 | 0.05 | 572.26 | 0.01 | 99.97 |
| 171.0-172.0 | 0.04 | 572.31 | 0.01 | 99.97 |
| 172.0-173.0 | 0.04 | 572.34 | 0.01 | 99.98 |
| 173.0-174.0 | 0.03 | 572.37 | 0.01 | 99.98 |
| 174.0-175.0 | 0.03 | 572.40 | 0.00 | 99.99 |
| 175.0-176.0 | 0.02 | 572.42 | 0.00 | 99.99 |
| 176.0-177.0 | 0.02 | 572.44 | 0.00 | 100.00 |
| 177.0-178.0 | 0.01 | 572.45 | 0.00 | 100.00 |
| 178.0-179.0 | 0.01 | 572.46 | 0.00 | 100.00 |
| 179.0-180.0 | 0.00 | 572.46 | 0.00 | 100.00 |

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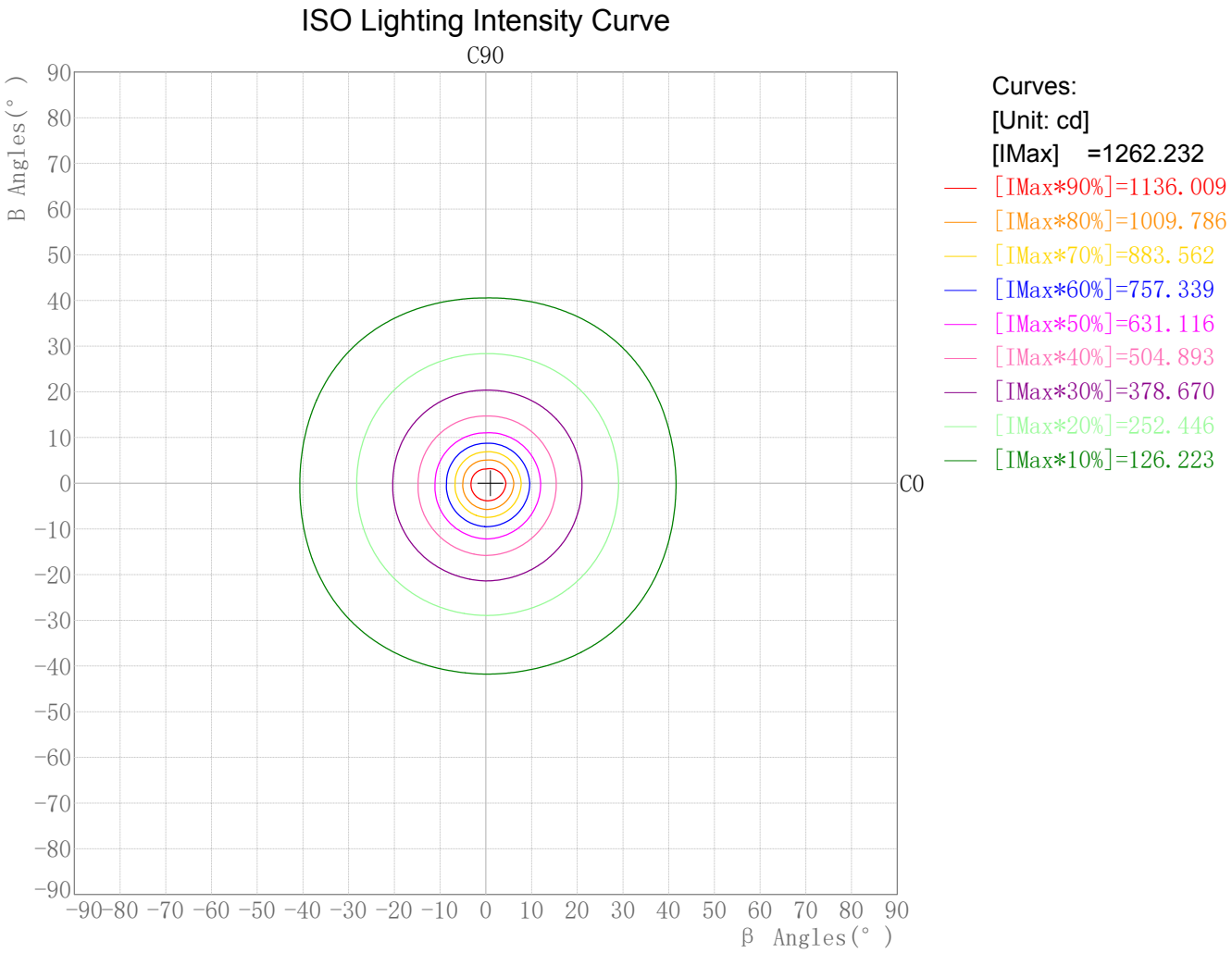
# Rectangle ISO Lighting Intensity Diagram

| | | |
|---|---|---|
| Lum.Name: HCP-809024-4000K RA90 28D | Lum.Catelog: | Test ID: 01 |
| Lamp Name: | Lamp Catelog: LED | Test Lab: Quality Department |
| Manufacture: Havit Commercial | Test Machine:GON-2000 | Test Date: 2020/09/22 |




Maximum Light Intensity(cd): 1262.23
Maximum Cand.@Angle: H=1.0°,V=0.0°

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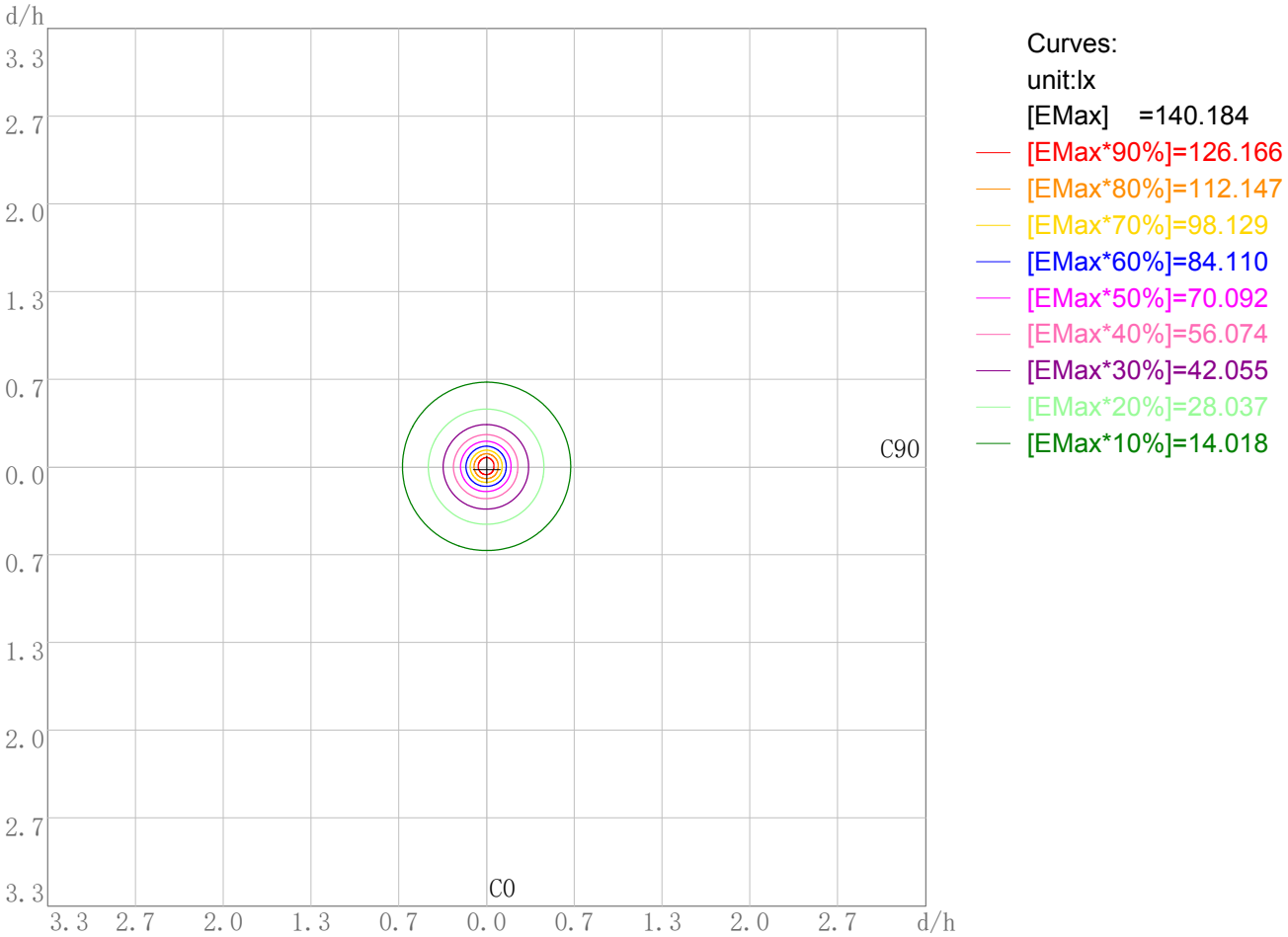
Tel：02 9381 8383
E-mail:sales@havitcommercial.com.au

# Plane ISO-Illuminance Diagram

| | | |
|---|---|---|
| Lum.Name: HCP-809024-4000K RA90 28D | Lum.Catelog: | Test ID: 01 |
| Lamp Name: | Lamp Catelog: LED | Test Lab: Quality Department |
| Manufacture: Havit Commercial | Test Machine:GON-2000 | Test Date: 2020/09/22 |

## Plane ISO-Illuminance Curve




Working Plane Luminaire Mounting Height(m): 3.00
Working Plane Maximum Illuminance(lx): 140.18
Working Plane Maximum Illuminance Position(d/h):H0.0 V0.0

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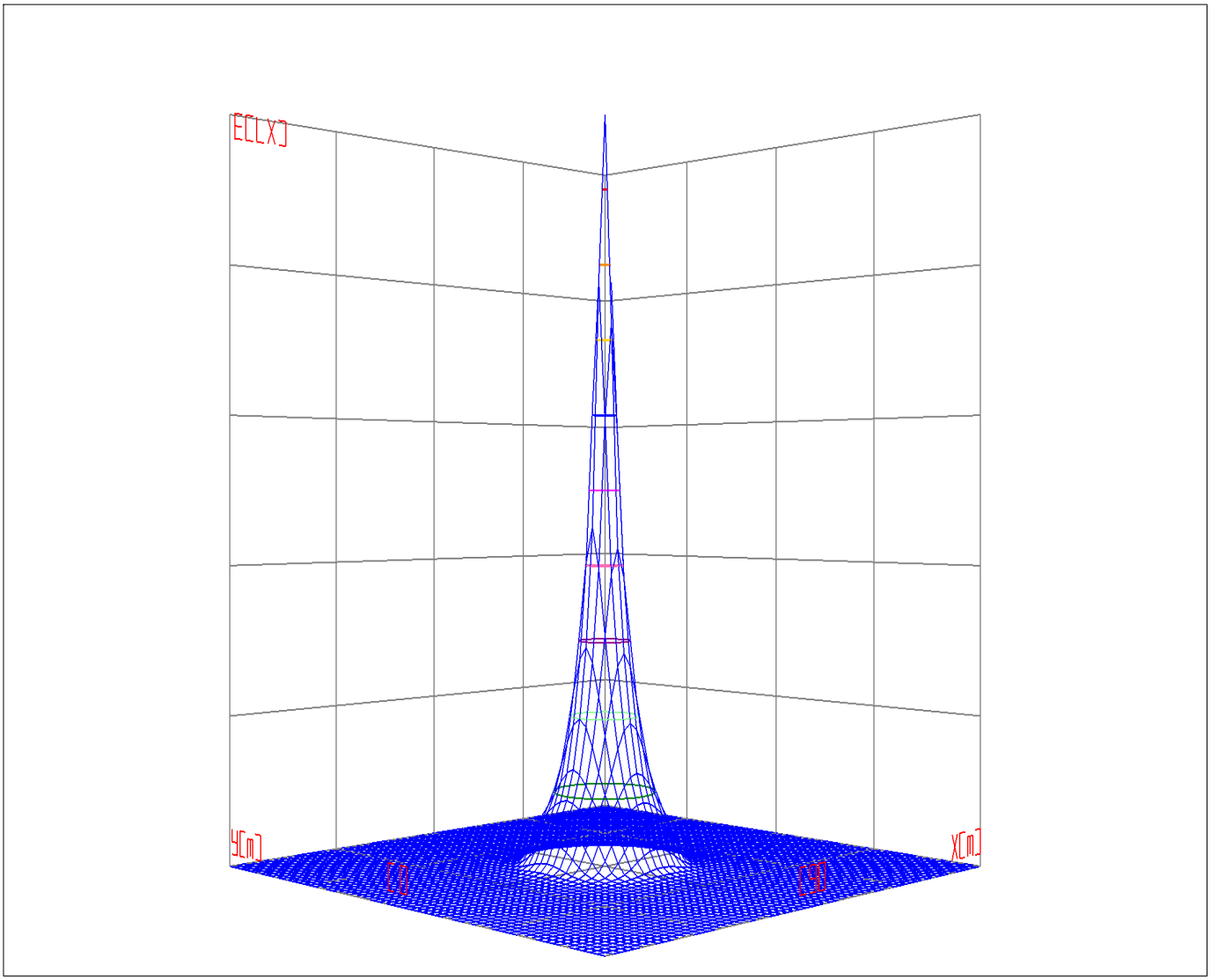
E-mail:sales@havitcommercial.com.au

# 3D Plane ISO Illuminance Diagram

| | | |
|---|---|---|
| Lum.Name: HCP-809024-4000K RA90 28D | Lum.Catelog: | Test ID: 01 |
| Lamp Name: | Lamp Catelog: LED | Test Lab: Quality Department |
| Manufacture: Havit Commercial | Test Machine:GON-2000 | Test Date: 2020/09/22 |

## 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

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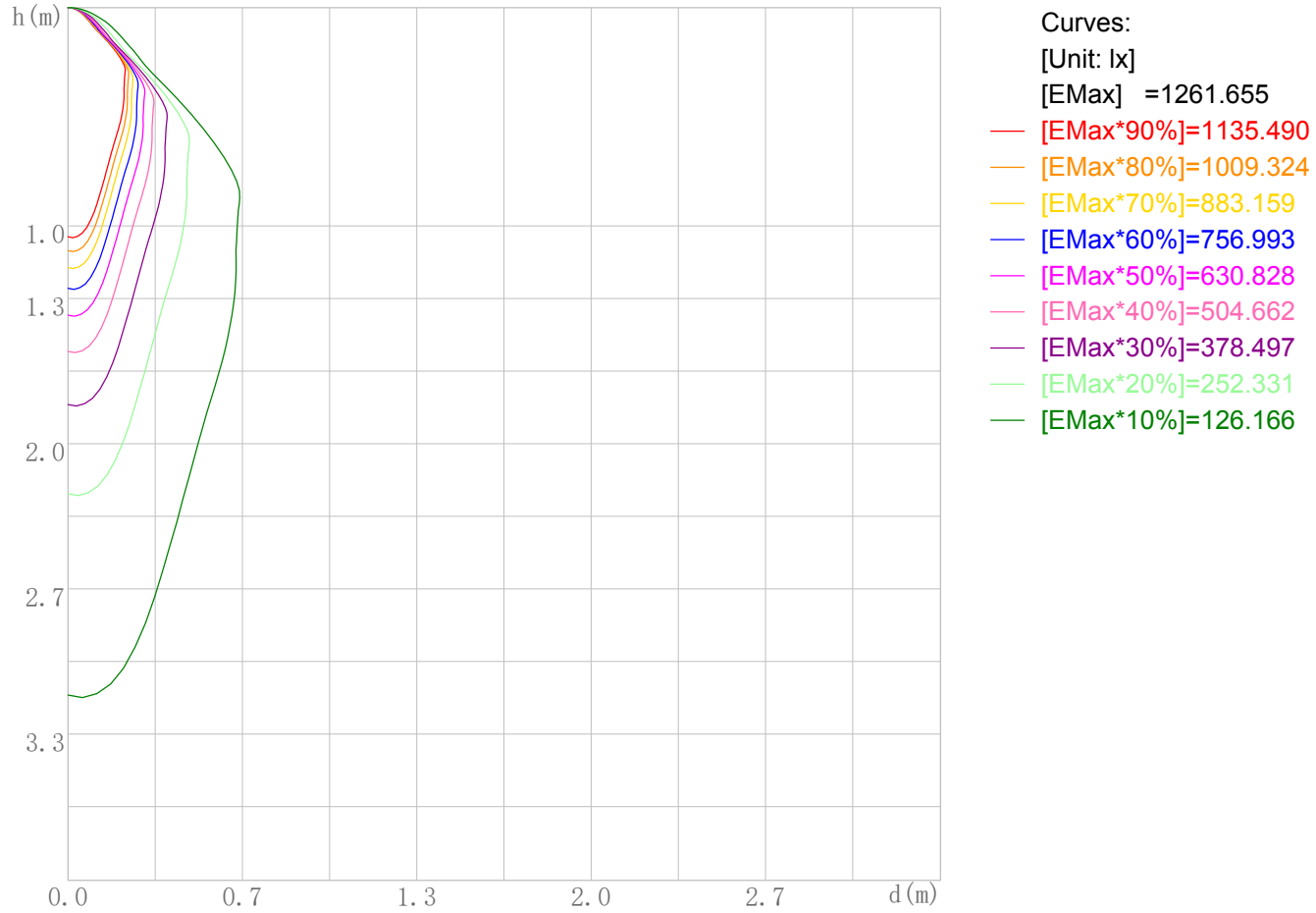
E-mail:sales@havitcommercial.com.au

# Space ISO Illuminance Diagram

| | | |
|---|---|---|
| Lum.Name: HCP-809024-4000K RA90 28D | Lum.Catelog: | Test ID: 01 |
| Lamp Name: | Lamp Catelog: LED | Test Lab: Quality Department |
| Manufacture: Havit Commercial | Test Machine:GON-2000 | Test Date: 2020/09/22 |

## Space ISO Illuminance Curve




Space Plane Maximum Illuminance and @Angle:1261.66lx,1.0deg
Plane Maximum Lighting Intensity and @Angle:1262.232cd,0eg

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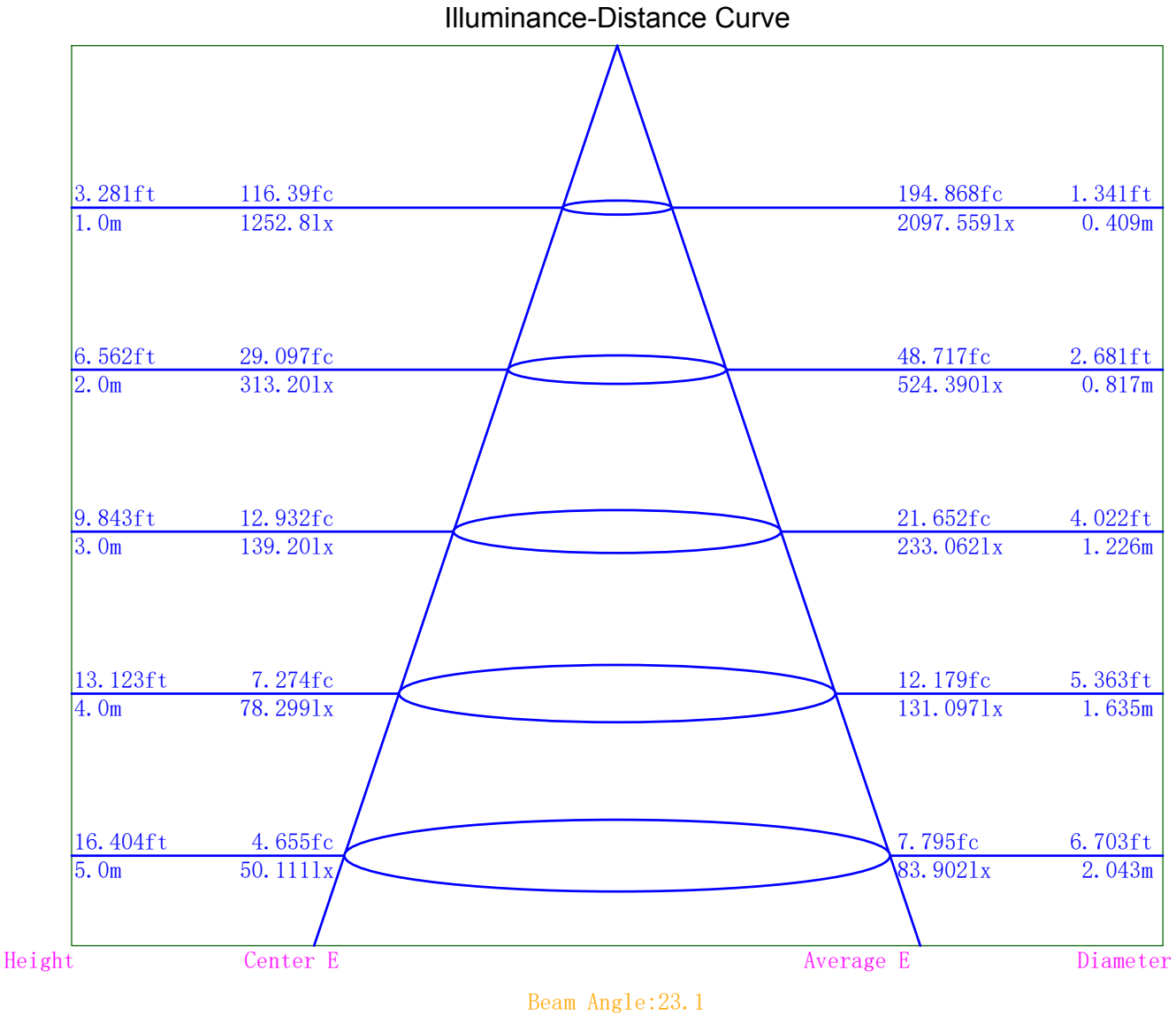
Tel：02 9381 8383
E-mail:sales@havitcommercial.com.au

# Illuminance-Distance Diagram

| | | |
|---|---|---|
| Lum.Name: HCP-809024-4000K RA90 28D | Lum.Catelog: | Test ID: 01 |
| Lamp Name: | Lamp Catelog: LED | Test Lab: Quality Department |
| Manufacture: Havit Commercial | Test Machine:GON-2000 | Test Date: 2020/09/22 |



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# Indoor Luminance Limiting Curves

| | | |
|---|---|---|
| Lum.Name: HCP-809024-4000K RA90 28D | Lum.Catelog: | Test ID: 01 |
| Lamp Name: | Lamp Catelog: LED | Test Lab: Quality Department |
| Manufacture: Havit Commercial | Test Machine:GON-2000 | Test Date: 2020/09/22 |

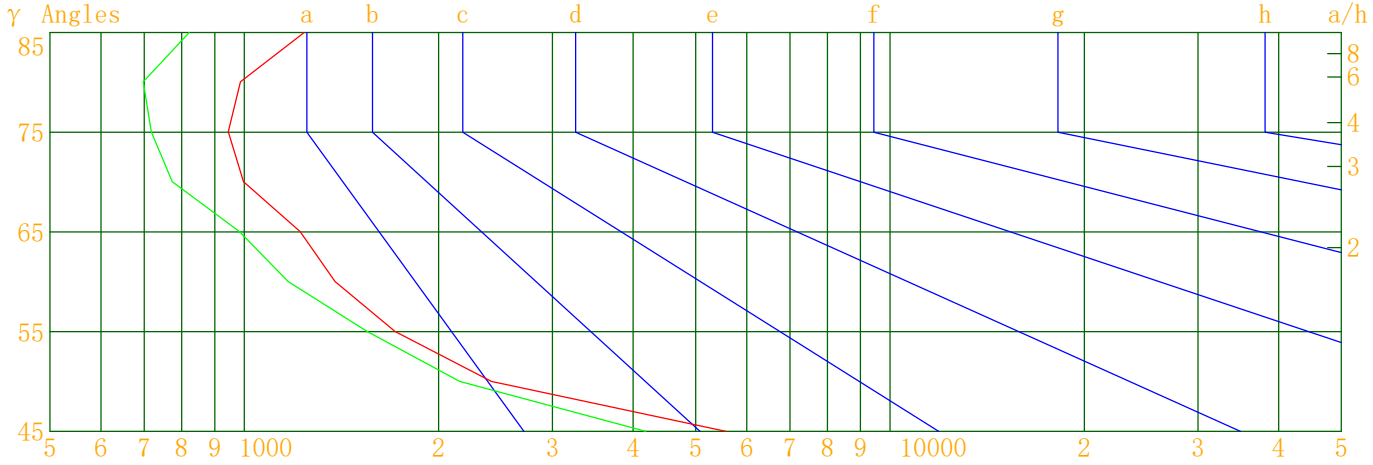
Glare Grade Table

| GI | Quality | Using Illuminace | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 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 | 5570 | 2415 | 1712 | 1382 | 1220 | 997 | 945 | 986 | 1238 |
| C90 | 4186 | 2156 | 1550 | 1169 | 983 | 774 | 718 | 697 | 822 |

Luminance Limiting Curve




Luminous Size: Length(m)=0.000 Width(m)=-0.050 Height(m)=0.080 Area(m^2)=0.015708
Luminous Type: Without Luminous Side
Luminous Curves: C0-C180 Color: C90-C270 Color:

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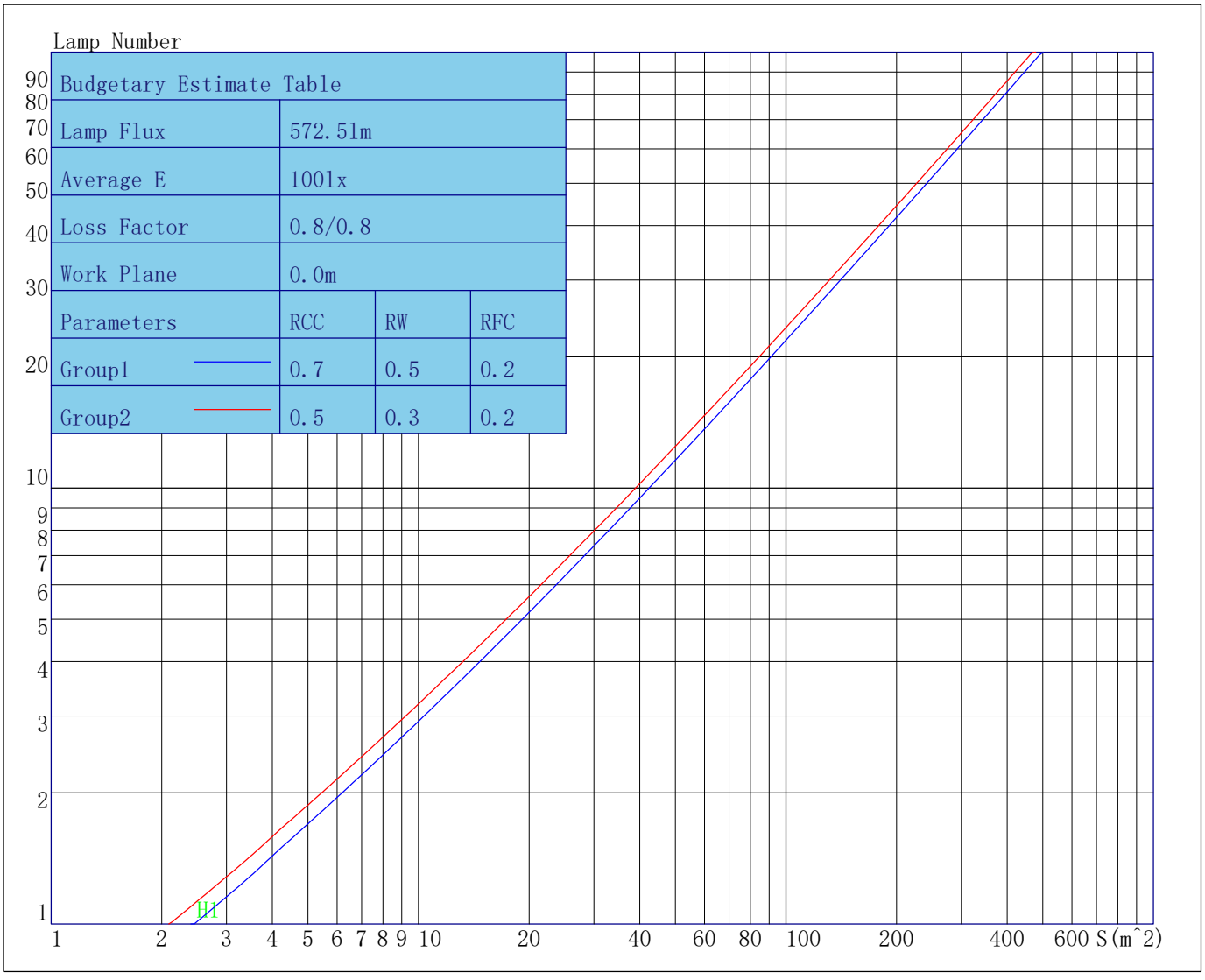
E-mail:sales@havitcommercial.com.au

# Indoor Budgetary Estimate Table

| | | |
|---|---|---|
| Lum.Name: HCP-809024-4000K RA90 28D | Lum.Catelog: | Test ID: 01 |
| Lamp Name: | Lamp Catelog: LED | Test Lab: Quality Department |
| Manufacture: Havit Commercial | Test Machine:GON-2000 | Test Date: 2020/09/22 |




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

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# Indoor Coefficient of Utilization Table

| | | |
|---|---|---|
| Lum.Name: HCP-809024-4000K RA90 28D | Lum.Catelog: | Test ID: 01 |
| Lamp Name: | Lamp Catelog: LED | Test Lab: Quality Department |
| Manufacture: Havit Commercial | Test Machine:GON-2000 | Test Date: 2020/09/22 |

| 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 | 119 | 119 | 119 | 119 | 116 | 116 | 116 | 116 | 111 | 111 | 111 | 106 | 106 | 106 | 102 | 102 | 102 | 99 |
| 1 | 113 | 110 | 108 | 105 | 111 | 108 | 106 | 104 | 104 | 102 | 100 | 100 | 98 | 97 | 96 | 95 | 94 | 92 |
| 2 | 107 | 102 | 98 | 94 | 105 | 100 | 97 | 93 | 97 | 94 | 91 | 94 | 91 | 89 | 91 | 89 | 87 | 85 |
| 3 | 102 | 95 | 90 | 86 | 100 | 94 | 89 | 85 | 91 | 87 | 84 | 88 | 85 | 82 | 86 | 83 | 81 | 79 |
| 4 | 96 | 89 | 83 | 79 | 95 | 87 | 82 | 78 | 85 | 81 | 77 | 83 | 79 | 76 | 81 | 78 | 75 | 74 |
| 5 | 92 | 83 | 77 | 73 | 90 | 82 | 76 | 72 | 80 | 75 | 72 | 78 | 74 | 71 | 77 | 73 | 70 | 69 |
| 6 | 87 | 78 | 72 | 67 | 85 | 77 | 71 | 67 | 75 | 70 | 67 | 74 | 70 | 66 | 73 | 69 | 66 | 64 |
| 7 | 83 | 73 | 67 | 63 | 81 | 73 | 67 | 63 | 71 | 66 | 62 | 70 | 65 | 62 | 69 | 65 | 62 | 60 |
| 8 | 79 | 69 | 63 | 59 | 78 | 69 | 63 | 59 | 67 | 62 | 59 | 66 | 62 | 58 | 65 | 61 | 58 | 57 |
| 9 | 75 | 65 | 60 | 56 | 74 | 65 | 59 | 55 | 64 | 59 | 55 | 63 | 58 | 55 | 62 | 58 | 55 | 53 |
| 10 | 72 | 62 | 56 | 52 | 71 | 62 | 56 | 52 | 61 | 56 | 52 | 60 | 55 | 52 | 59 | 55 | 52 | 51 |

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# Unified Glare Rating Table

| | | |
|---|---|---|
| Lum.Name: HCP-809024-4000K RA90 28D | Lum.Catelog: | Test ID: 01 |
| Lamp Name: | Lamp Catelog: LED | Test Lab: Quality Department |
| Manufacture: Havit Commercial | Test Machine:GON-2000 | Test Date: 2020/09/22 |

## 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 | | Vewed crosswise | | | | | Vewed endwise | | | | |
| X=2H | Y=2H | 14.7 | 15.8 | 15.1 | 16.1 | 16.4 | 14.1 | 15.2 | 14.5 | 15.5 | 15.8 |
| | Y=3H | 14.7 | 15.6 | 15.1 | 16.0 | 16.3 | 14.1 | 15.0 | 14.4 | 15.3 | 15.7 |
| | Y=4H | 14.7 | 15.5 | 15.1 | 15.9 | 16.3 | 14.0 | 14.9 | 14.4 | 15.3 | 15.7 |
| | Y=6H | 14.6 | 15.4 | 15.1 | 15.8 | 16.2 | 14.0 | 14.8 | 14.4 | 15.2 | 15.6 |
| | Y=8H | 14.6 | 15.4 | 15.1 | 15.8 | 16.2 | 14.0 | 14.7 | 14.4 | 15.1 | 15.5 |
| | Y=12H | 14.6 | 15.4 | 15.1 | 15.7 | 16.2 | 13.9 | 14.6 | 14.4 | 15.0 | 15.5 |
| X=4H | Y=2H | 14.5 | 15.4 | 14.9 | 15.7 | 16.1 | 13.9 | 14.8 | 14.3 | 15.2 | 15.6 |
| | Y=3H | 14.5 | 15.2 | 15.0 | 15.7 | 16.1 | 13.9 | 14.6 | 14.3 | 15.0 | 15.5 |
| | Y=4H | 14.5 | 15.2 | 15.0 | 15.6 | 16.1 | 13.9 | 14.5 | 14.3 | 15.0 | 15.4 |
| | Y=6H | 14.6 | 15.1 | 15.1 | 15.6 | 16.1 | 13.9 | 14.4 | 14.4 | 14.9 | 15.4 |
| | Y=8H | 14.6 | 15.1 | 15.1 | 15.6 | 16.1 | 13.9 | 14.4 | 14.4 | 14.8 | 15.3 |
| | Y=12H | 14.6 | 15.1 | 15.1 | 15.6 | 16.1 | 13.9 | 14.3 | 14.4 | 14.8 | 15.3 |
| X=8H | Y=4H | 14.4 | 15.0 | 14.9 | 15.4 | 15.9 | 13.8 | 14.3 | 14.3 | 14.8 | 15.2 |
| | Y=6H | 14.5 | 14.9 | 15.1 | 15.5 | 16.0 | 13.8 | 14.2 | 14.3 | 14.7 | 15.3 |
| | Y=8H | 14.6 | 15.0 | 15.1 | 15.5 | 16.0 | 13.8 | 14.2 | 14.4 | 14.7 | 15.2 |
| | Y=12H | 14.7 | 15.0 | 15.2 | 15.5 | 16.1 | 13.9 | 14.2 | 14.4 | 14.7 | 15.3 |
| X=12H | Y=4H | 14.4 | 14.8 | 14.9 | 15.3 | 15.8 | 13.7 | 14.2 | 14.2 | 14.7 | 15.2 |
| | Y=6H | 14.5 | 14.9 | 15.0 | 15.4 | 15.9 | 13.8 | 14.1 | 14.3 | 14.6 | 15.2 |
| | Y=8H | 14.6 | 14.9 | 15.1 | 15.4 | 16.0 | 13.8 | 14.1 | 14.3 | 14.6 | 15.2 |
| Variations with the observer position at spacings | | | | | | | | | | | |
| S=1.0H | | 0.3/-0.3 | | | | | 0.4/-0.4 | | | | |
| S=1.5H | | 0.6/-0.6 | | | | | 0.7/-0.7 | | | | |
| S=2.0H | | 1.0/-0.9 | | | | | 1.2/-1.1 | | | | |
| Reduced UGR Table: | | | | | | | | | | | |
| Nordic Standard Table: | | BK0 | | | | | BK0 | | | | |
| Correction Value | | 0.6 | | | | | 0.4 | | | | |

o 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 | 1252.78 | 1252.78 | 1252.78 | 1252.78 |
| γ 1.0 | 1262.23 | 1225.85 | 1239.88 | 1238.41 |
| γ 2.0 | 1249.47 | 1193.64 | 1205.23 | 1219.93 |
| γ 3.0 | 1218.05 | 1142.28 | 1151.19 | 1180.51 |
| γ 4.0 | 1165.27 | 1081.01 | 1086.55 | 1126.86 |
| γ 5.0 | 1095.92 | 1013.49 | 1012.03 | 1060.35 |
| γ 6.0 | 1019.44 | 945.16 | 936.76 | 990.46 |
| γ 7.0 | 940.41 | 874.48 | 863.13 | 916.18 |
| γ 8.0 | 863.15 | 805.69 | 793.37 | 847.22 |
| γ 9.0 | 793.95 | 740.15 | 733.65 | 785.58 |
| γ 10.0 | 734.09 | 682.68 | 680.74 | 731.37 |
| γ 11.0 | 678.40 | 632.30 | 635.45 | 682.08 |
| γ 12.0 | 630.50 | 589.65 | 595.43 | 639.10 |
| γ 13.0 | 587.72 | 553.86 | 559.44 | 599.03 |
| γ 14.0 | 549.79 | 524.38 | 527.85 | 562.08 |
| γ 15.0 | 516.69 | 496.89 | 499.32 | 528.45 |
| γ 16.0 | 487.54 | 472.24 | 473.81 | 499.36 |
| γ 17.0 | 462.55 | 450.46 | 449.90 | 474.32 |
| γ 18.0 | 439.56 | 428.04 | 427.65 | 450.70 |
| γ 19.0 | 418.01 | 405.78 | 405.44 | 428.19 |
| γ 20.0 | 398.28 | 385.91 | 385.26 | 406.52 |
| γ 21.0 | 379.56 | 366.87 | 366.06 | 385.91 |
| γ 22.0 | 361.40 | 349.67 | 348.43 | 366.95 |
| γ 23.0 | 343.67 | 333.08 | 332.38 | 348.09 |
| γ 24.0 | 327.63 | 317.77 | 316.45 | 329.70 |
| γ 25.0 | 312.10 | 301.81 | 300.53 | 312.95 |
| γ 26.0 | 297.01 | 286.74 | 284.71 | 296.55 |
| γ 27.0 | 281.67 | 271.77 | 269.97 | 280.60 |
| γ 28.0 | 267.58 | 257.29 | 255.46 | 266.02 |
| γ 29.0 | 252.99 | 243.98 | 242.10 | 251.43 |
| γ 30.0 | 239.99 | 233.52 | 230.91 | 238.36 |
| γ 31.0 | 230.07 | 223.46 | 220.31 | 227.30 |
| γ 32.0 | 220.71 | 214.57 | 211.24 | 217.13 |
| γ 33.0 | 212.26 | 205.76 | 202.62 | 207.52 |
| γ 34.0 | 204.88 | 198.69 | 195.48 | 199.32 |
| γ 35.0 | 198.13 | 192.01 | 188.94 | 191.38 |
| γ 36.0 | 193.00 | 185.90 | 183.14 | 185.15 |
| γ 37.0 | 187.75 | 178.32 | 176.53 | 179.79 |
| γ 38.0 | 181.03 | 168.03 | 167.13 | 174.62 |
| γ 39.0 | 170.35 | 153.89 | 153.92 | 167.06 |
| γ 40.0 | 155.55 | 136.92 | 138.16 | 155.67 |
| γ 41.0 | 138.04 | 117.69 | 120.52 | 140.01 |
| γ 42.0 | 118.76 | 98.17 | 102.16 | 122.34 |
| γ 43.0 | 99.34 | 78.84 | 83.58 | 103.57 |
| γ 44.0 | 79.80 | 61.16 | 65.40 | 84.32 |
| γ 45.0 | 61.87 | 46.49 | 49.50 | 65.87 |
| γ 46.0 | 46.75 | 35.83 | 37.46 | 49.85 |

## Candela Tabulation - (Cont.)

| V/H | C0.0 | C90.0 | C180.0 | C270.0 |
|---|---|---|---|---|
| γ 47.0 | 36.15 | 29.47 | 29.88 | 37.49 |
| γ 48.0 | 30.04 | 26.09 | 25.83 | 29.88 |
| γ 49.0 | 26.68 | 23.80 | 23.32 | 25.67 |
| γ 50.0 | 24.38 | 21.77 | 21.10 | 23.19 |
| γ 51.0 | 22.25 | 19.84 | 19.02 | 21.09 |
| γ 52.0 | 20.20 | 18.12 | 16.84 | 19.19 |
| γ 53.0 | 18.24 | 16.53 | 15.15 | 17.34 |
| γ 54.0 | 16.59 | 15.13 | 13.77 | 15.89 |
| γ 55.0 | 15.43 | 13.96 | 12.56 | 14.69 |
| γ 56.0 | 14.38 | 12.69 | 11.28 | 13.66 |
| γ 57.0 | 13.36 | 11.59 | 10.35 | 12.71 |
| γ 58.0 | 12.48 | 10.72 | 9.57 | 11.81 |
| γ 59.0 | 11.68 | 9.89 | 8.81 | 10.99 |
| γ 60.0 | 10.86 | 9.18 | 8.14 | 10.15 |
| γ 61.0 | 10.25 | 8.61 | 7.65 | 9.41 |
| γ 62.0 | 9.75 | 8.08 | 7.17 | 8.86 |
| γ 63.0 | 9.17 | 7.56 | 6.75 | 8.31 |
| γ 64.0 | 8.67 | 7.06 | 6.33 | 7.80 |
| γ 65.0 | 8.10 | 6.52 | 5.89 | 7.33 |
| γ 66.0 | 7.57 | 6.00 | 5.50 | 6.86 |
| γ 67.0 | 6.96 | 5.44 | 5.02 | 6.38 |
| γ 68.0 | 6.42 | 4.94 | 4.65 | 5.89 |
| γ 69.0 | 5.79 | 4.47 | 4.19 | 5.45 |
| γ 70.0 | 5.36 | 4.16 | 3.94 | 4.99 |
| γ 71.0 | 5.00 | 3.87 | 3.71 | 4.70 |
| γ 72.0 | 4.67 | 3.61 | 3.51 | 4.46 |
| γ 73.0 | 4.38 | 3.38 | 3.32 | 4.21 |
| γ 74.0 | 4.10 | 3.15 | 3.14 | 3.98 |
| γ 75.0 | 3.84 | 2.92 | 2.95 | 3.76 |
| γ 76.0 | 3.59 | 2.70 | 2.75 | 3.56 |
| γ 77.0 | 3.37 | 2.48 | 2.56 | 3.34 |
| γ 78.0 | 3.13 | 2.30 | 2.38 | 3.14 |
| γ 79.0 | 2.91 | 2.10 | 2.19 | 2.93 |
| γ 80.0 | 2.69 | 1.90 | 2.02 | 2.73 |
| γ 81.0 | 2.48 | 1.74 | 1.84 | 2.51 |
| γ 82.0 | 2.27 | 1.57 | 1.65 | 2.31 |
| γ 83.0 | 2.06 | 1.46 | 1.52 | 2.10 |
| γ 84.0 | 1.88 | 1.32 | 1.40 | 1.92 |
| γ 85.0 | 1.70 | 1.13 | 1.25 | 1.73 |
| γ 86.0 | 1.54 | 0.94 | 1.08 | 1.56 |
| γ 87.0 | 1.34 | 0.71 | 0.88 | 1.39 |
| γ 88.0 | 1.12 | 0.41 | 0.60 | 1.20 |
| γ 89.0 | 0.84 | 0.17 | 0.31 | 0.95 |
| γ 90.0 | 0.67 | 0.09 | 0.22 | 0.77 |
| γ 91.0 | 0.58 | 0.05 | 0.16 | 0.66 |
| γ 92.0 | 0.51 | 0.00 | 0.10 | 0.59 |
| γ 93.0 | 0.45 | 0.00 | 0.04 | 0.51 |

## Candela Tabulation - (Cont.)

| V/H | C0.0 | C90.0 | C180.0 | C270.0 |
|---|---|---|---|---|
| γ 94.0 | 0.39 | 0.00 | 0.00 | 0.45 |
| γ 95.0 | 0.34 | 0.00 | 0.00 | 0.40 |
| γ 96.0 | 0.28 | 0.00 | 0.00 | 0.34 |
| γ 97.0 | 0.24 | 0.00 | 0.00 | 0.28 |
| γ 98.0 | 0.20 | 0.00 | 0.00 | 0.24 |
| γ 99.0 | 0.15 | 0.00 | 0.00 | 0.20 |
| γ 100.0 | 0.11 | 0.00 | 0.00 | 0.15 |
| γ 101.0 | 0.08 | 0.00 | 0.00 | 0.12 |
| γ 102.0 | 0.04 | 0.00 | 0.00 | 0.08 |
| γ 103.0 | 0.02 | 0.00 | 0.00 | 0.06 |
| γ 104.0 | 0.00 | 0.00 | 0.00 | 0.04 |
| γ 105.0 | 0.00 | 0.00 | 0.00 | 0.02 |
| γ 106.0 | 0.00 | 0.00 | 0.00 | 0.01 |
| γ 107.0 | 0.00 | 0.00 | 0.00 | 0.00 |
| γ 108.0 | 0.00 | 0.00 | 0.00 | 0.00 |
| γ 109.0 | 0.00 | 0.00 | 0.00 | 0.00 |
| γ 110.0 | 0.00 | 0.00 | 0.00 | 0.00 |
| γ 111.0 | 0.00 | 0.00 | 0.00 | 0.00 |
| γ 112.0 | 0.00 | 0.00 | 0.00 | 0.00 |
| γ 113.0 | 0.00 | 0.00 | 0.00 | 0.00 |
| γ 114.0 | 0.00 | 0.00 | 0.00 | 0.00 |
| γ 115.0 | 0.00 | 0.00 | 0.00 | 0.00 |
| γ 116.0 | 0.00 | 0.00 | 0.00 | 0.00 |
| γ 117.0 | 0.00 | 0.00 | 0.00 | 0.00 |
| γ 118.0 | 0.00 | 0.00 | 0.00 | 0.01 |
| γ 119.0 | 0.00 | 0.00 | 0.00 | 0.04 |
| γ 120.0 | 0.00 | 0.00 | 0.00 | 0.06 |
| γ 121.0 | 0.00 | 0.00 | 0.00 | 0.08 |
| γ 122.0 | 0.00 | 0.00 | 0.00 | 0.10 |
| γ 123.0 | 0.00 | 0.00 | 0.00 | 0.14 |
| γ 124.0 | 0.04 | 0.00 | 0.01 | 0.17 |
| γ 125.0 | 0.05 | 0.00 | 0.05 | 0.20 |
| γ 126.0 | 0.09 | 0.00 | 0.10 | 0.23 |
| γ 127.0 | 0.13 | 0.00 | 0.13 | 0.26 |
| γ 128.0 | 0.17 | 0.01 | 0.19 | 0.31 |
| γ 129.0 | 0.22 | 0.06 | 0.24 | 0.35 |
| γ 130.0 | 0.26 | 0.12 | 0.30 | 0.39 |
| γ 131.0 | 0.31 | 0.17 | 0.35 | 0.44 |
| γ 132.0 | 0.36 | 0.23 | 0.40 | 0.49 |
| γ 133.0 | 0.41 | 0.28 | 0.46 | 0.55 |
| γ 134.0 | 0.47 | 0.34 | 0.53 | 0.61 |
| γ 135.0 | 0.53 | 0.41 | 0.60 | 0.68 |
| γ 136.0 | 0.60 | 0.49 | 0.67 | 0.74 |
| γ 137.0 | 0.67 | 0.56 | 0.75 | 0.80 |
| γ 138.0 | 0.73 | 0.63 | 0.83 | 0.88 |
| γ 139.0 | 0.81 | 0.70 | 0.91 | 0.95 |
| γ 140.0 | 0.88 | 0.78 | 1.00 | 1.02 |

# Candela Tabulation - (Cont.)

| V/H | C0.0 | C90.0 | C180.0 | C270.0 |
|---|---|---|---|---|
| γ 141.0 | 0.95 | 0.86 | 1.08 | 1.10 |
| γ 142.0 | 1.03 | 0.94 | 1.15 | 1.18 |
| γ 143.0 | 1.10 | 1.01 | 1.22 | 1.25 |
| γ 144.0 | 1.17 | 1.08 | 1.30 | 1.32 |
| γ 145.0 | 1.24 | 1.16 | 1.38 | 1.39 |
| γ 146.0 | 1.31 | 1.23 | 1.43 | 1.46 |
| γ 147.0 | 1.38 | 1.30 | 1.50 | 1.52 |
| γ 148.0 | 1.45 | 1.36 | 1.57 | 1.58 |
| γ 149.0 | 1.52 | 1.43 | 1.63 | 1.65 |
| γ 150.0 | 1.58 | 1.49 | 1.67 | 1.70 |
| γ 151.0 | 1.64 | 1.54 | 1.74 | 1.75 |
| γ 152.0 | 1.70 | 1.61 | 1.80 | 1.80 |
| γ 153.0 | 1.76 | 1.66 | 1.86 | 1.86 |
| γ 154.0 | 1.82 | 1.72 | 1.92 | 1.90 |
| γ 155.0 | 1.88 | 1.77 | 1.97 | 1.95 |
| γ 156.0 | 1.94 | 1.83 | 2.02 | 1.98 |
| γ 157.0 | 1.98 | 1.87 | 2.06 | 2.05 |
| γ 158.0 | 2.04 | 1.93 | 2.11 | 2.08 |
| γ 159.0 | 2.09 | 1.97 | 2.16 | 2.13 |
| γ 160.0 | 2.13 | 2.03 | 2.21 | 2.16 |
| γ 161.0 | 2.18 | 2.07 | 2.24 | 2.20 |
| γ 162.0 | 2.22 | 2.12 | 2.29 | 2.24 |
| γ 163.0 | 2.27 | 2.16 | 2.33 | 2.28 |
| γ 164.0 | 2.31 | 2.20 | 2.37 | 2.31 |
| γ 165.0 | 2.37 | 2.25 | 2.40 | 2.35 |
| γ 166.0 | 2.40 | 2.30 | 2.43 | 2.37 |
| γ 167.0 | 2.44 | 2.34 | 2.46 | 2.41 |
| γ 168.0 | 2.47 | 2.37 | 2.50 | 2.44 |
| γ 169.0 | 2.51 | 2.41 | 2.53 | 2.48 |
| γ 170.0 | 2.54 | 2.44 | 2.56 | 2.51 |
| γ 171.0 | 2.57 | 2.47 | 2.57 | 2.54 |
| γ 172.0 | 2.60 | 2.50 | 2.59 | 2.56 |
| γ 173.0 | 2.62 | 2.52 | 2.62 | 2.58 |
| γ 174.0 | 2.64 | 2.55 | 2.63 | 2.60 |
| γ 175.0 | 2.65 | 2.55 | 2.64 | 2.62 |
| γ 176.0 | 2.67 | 2.58 | 2.65 | 2.63 |
| γ 177.0 | 2.68 | 2.59 | 2.66 | 2.65 |
| γ 178.0 | 2.69 | 2.60 | 2.65 | 2.66 |
| γ 179.0 | 2.69 | 2.61 | 2.67 | 2.66 |
| γ 180.0 | 2.66 | 2.66 | 2.66 | 2.66 |