

Cooper Lighting Solutions Photometric Lab  
1121 Highway 74 South  
Peachtree City, GA 30269



Scaled data based on original data using  
LM-79-2019 Approved Method: Electrical and Photometric Measurements of Solid-  
State Lighting Products

Test Report Prepared for  
Cooper Lighting Solutions

Brand: NEO-RAY

Report Number: P907268

Luminaire Tested: DFN2DIP-TR3F0-090D090US835-FLLFLL

Issue Date: 11/21/2024

**Test Information**

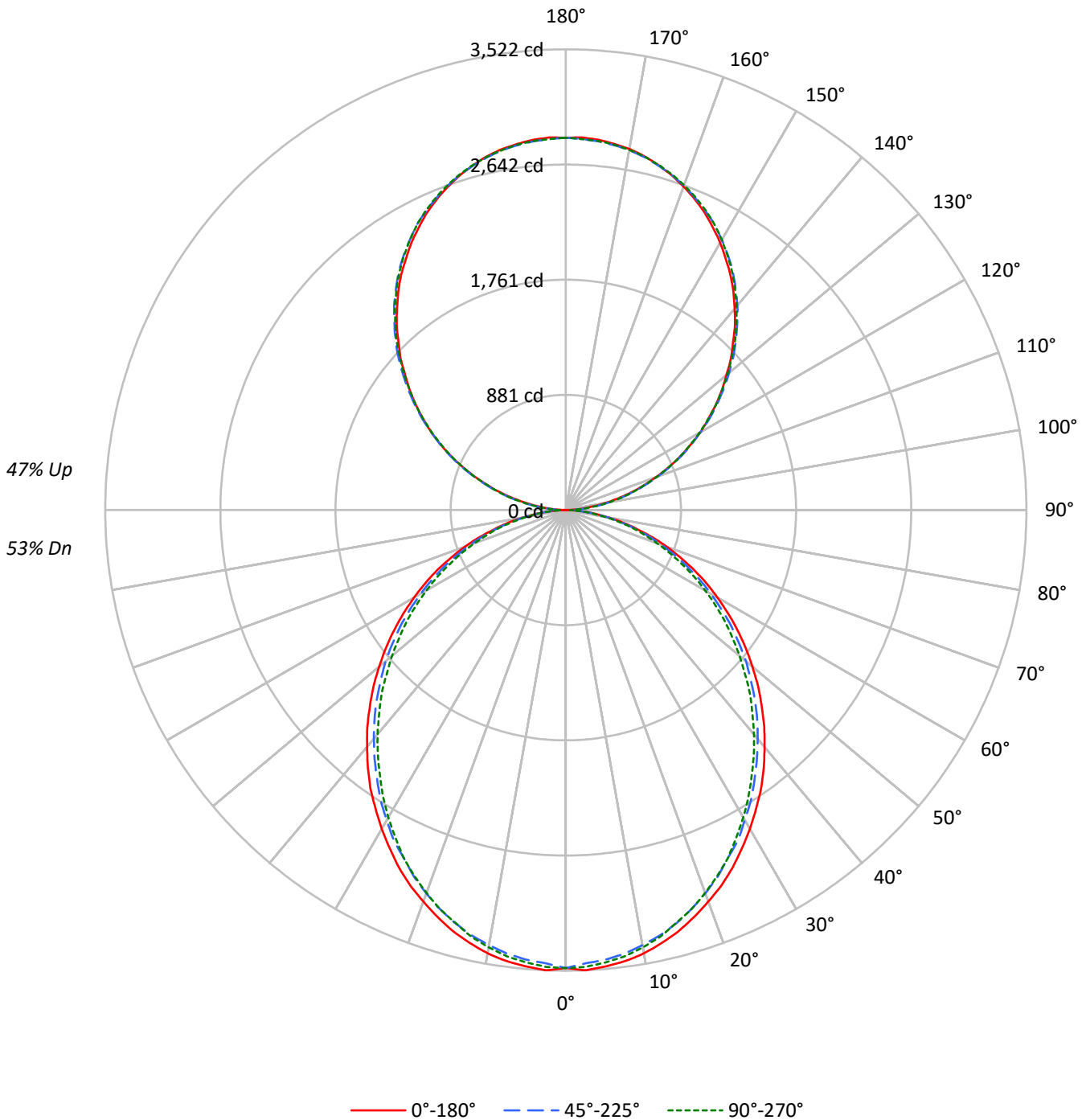
Test Method: LM-79-2019  
Report Number: P907268  
REPORT IS A COMBINATION OF REPORTS P900367 AND P897195  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-TR3F0-090D090US835-FLLFLL  
Description: 3 foot, Triangle Define Geo, with Direct Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 16875.0 lumens  
Efficiency: N/A  
Efficacy: 101.8 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29  
Luminous Opening: Rectangular w/ Sides (W: 2.74' x L: 3.16' x H: 0.1')  
CIE Type: General Diffuse  
  
Input Watts (W): 165.8  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9951  
Total Harmonic Distortion (THDi): 0.07  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT

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### Luminous Intensity Polar Plot





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**COEFFICIENT OF UTILIZATION - ZONAL CAVITY METHOD:**

|     |     |     |     |     |     |     |     |     |    |    |    |    |    |    |    |    |    |    |    |    |    |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| RF  | 20  |     |     |     | 20  |     |     |     | 20 |    |    |    | 20 |    |    |    | 20 |    |    |    |    |
| RC  | 80  |     |     |     | 70  |     |     |     | 50 |    |    |    | 30 |    |    |    | 10 |    |    | 0  |    |
| RW  | 70  | 50  | 30  | 10  | 70  | 50  | 30  | 10  | 50 | 30 | 10 | 50 | 30 | 10 | 50 | 30 | 10 | 50 | 30 | 10 | 0  |
| RCR |     |     |     |     |     |     |     |     |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 0   | 108 | 108 | 108 | 108 | 100 | 100 | 100 | 100 | 85 | 85 | 85 | 71 | 71 | 71 | 59 | 59 | 59 | 59 | 59 | 59 | 53 |
| 1   | 98  | 94  | 90  | 87  | 91  | 87  | 84  | 81  | 74 | 72 | 70 | 63 | 61 | 59 | 52 | 51 | 50 | 52 | 51 | 50 | 45 |
| 2   | 90  | 82  | 76  | 71  | 83  | 76  | 71  | 66  | 65 | 61 | 58 | 55 | 52 | 50 | 46 | 44 | 42 | 46 | 44 | 42 | 37 |
| 3   | 82  | 72  | 65  | 59  | 75  | 67  | 61  | 55  | 58 | 53 | 49 | 49 | 45 | 42 | 41 | 38 | 36 | 41 | 38 | 36 | 32 |
| 4   | 75  | 64  | 56  | 50  | 69  | 60  | 52  | 47  | 51 | 46 | 41 | 43 | 39 | 36 | 36 | 33 | 31 | 36 | 33 | 31 | 27 |
| 5   | 69  | 57  | 49  | 43  | 63  | 53  | 46  | 40  | 46 | 40 | 36 | 39 | 35 | 31 | 33 | 29 | 27 | 33 | 29 | 27 | 24 |
| 6   | 63  | 51  | 43  | 37  | 58  | 48  | 40  | 35  | 41 | 36 | 31 | 35 | 31 | 27 | 30 | 26 | 24 | 30 | 26 | 24 | 21 |
| 7   | 59  | 46  | 38  | 33  | 54  | 43  | 36  | 31  | 37 | 32 | 28 | 32 | 28 | 24 | 27 | 24 | 21 | 27 | 24 | 21 | 18 |
| 8   | 54  | 42  | 34  | 29  | 50  | 39  | 32  | 27  | 34 | 29 | 24 | 29 | 25 | 22 | 25 | 21 | 19 | 25 | 21 | 19 | 16 |
| 9   | 51  | 38  | 31  | 26  | 47  | 36  | 29  | 24  | 31 | 26 | 22 | 27 | 23 | 19 | 23 | 20 | 17 | 23 | 20 | 17 | 15 |
| 10  | 47  | 35  | 28  | 23  | 44  | 33  | 26  | 22  | 29 | 23 | 20 | 25 | 21 | 18 | 21 | 18 | 15 | 21 | 18 | 15 | 13 |

**AVERAGE LUMINANCE (cd/sqm):**

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 4364 | 4364 | 4364 |
| 5°  | 4368 | 4299 | 4329 |
| 10° | 4331 | 4238 | 4268 |
| 15° | 4265 | 4164 | 4173 |
| 20° | 4176 | 4064 | 4076 |
| 25° | 4088 | 3944 | 3965 |
| 30° | 3978 | 3832 | 3825 |
| 35° | 3874 | 3702 | 3676 |
| 40° | 3746 | 3569 | 3534 |
| 45° | 3618 | 3436 | 3389 |
| 50° | 3479 | 3296 | 3222 |
| 55° | 3332 | 3135 | 3067 |
| 60° | 3166 | 2943 | 2889 |
| 65° | 2985 | 2745 | 2679 |
| 70° | 2754 | 2502 | 2453 |
| 75° | 2435 | 2211 | 2240 |
| 80° | 2050 | 1840 | 1841 |
| 85° | 1448 | 1212 | 1189 |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
 Vertical Angle: 45°  
 Luminance: 3618 cd/sqm



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**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 329.6   | 2.0       |
| 10°-20°   | 927.4   | 5.5       |
| 20°-30°   | 1362.9  | 8.1       |
| 30°-40°   | 1582.9  | 9.4       |
| 40°-50°   | 1580.9  | 9.4       |
| 50°-60°   | 1378.5  | 8.2       |
| 60°-70°   | 1019.0  | 6.0       |
| 70°-80°   | 576.6   | 3.4       |
| 80°-90°   | 160.3   | 0.9       |
| 90°-100°  | 176.1   | 1.0       |
| 100°-110° | 559.6   | 3.3       |
| 110°-120° | 957.7   | 5.7       |
| 120°-130° | 1259.5  | 7.5       |
| 130°-140° | 1413.8  | 8.4       |
| 140°-150° | 1386.4  | 8.2       |
| 150°-160° | 1163.0  | 6.9       |
| 160°-170° | 771.2   | 4.6       |
| 170°-180° | 269.6   | 1.6       |
| 0°-30°    | 2619.9  | 15.5      |
| 0°-40°    | 4202.8  | 24.9      |
| 0°-60°    | 7162.3  | 42.4      |
| 0°-90°    | 8918.1  | 52.8      |
| 90°-120°  | 1693.5  | 10.0      |
| 90°-150°  | 5753.1  | 34.1      |
| 90°-180°  | 7957.0  | 47.2      |
| 0°-180°   | 16875.0 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 3502 | 3502  | 3502 | 3502  | 3502 |      |
| 5°   | 3502 | 3489  | 3452 | 3478  | 3472 | 332  |
| 15°  | 3334 | 3314  | 3270 | 3283  | 3266 | 939  |
| 25°  | 3017 | 2990  | 2933 | 2940  | 2933 | 1388 |
| 35°  | 2603 | 2570  | 2516 | 2495  | 2478 | 1626 |
| 45°  | 2118 | 2095  | 2044 | 2007  | 1994 | 1635 |
| 55°  | 1603 | 1583  | 1542 | 1502  | 1485 | 1433 |
| 65°  | 1081 | 1061  | 1027 | 997   | 980  | 1069 |
| 75°  | 566  | 559   | 542  | 522   | 529  | 604  |
| 85°  | 138  | 135   | 132  | 121   | 118  | 154  |
| 90°  | 3    | 31    | 84   | 79    | 82   | 16   |
| 95°  | 125  | 149   | 154  | 154   | 149  | 139  |
| 105° | 517  | 523   | 529  | 533   | 533  | 545  |
| 115° | 961  | 975   | 970  | 968   | 961  | 951  |
| 125° | 1398 | 1419  | 1412 | 1405  | 1402 | 1249 |
| 135° | 1808 | 1835  | 1840 | 1837  | 1830 | 1398 |
| 145° | 2195 | 2212  | 2226 | 2228  | 2219 | 1372 |
| 155° | 2510 | 2517  | 2525 | 2537  | 2529 | 1155 |
| 165° | 2730 | 2728  | 2728 | 2745  | 2733 | 770  |
| 175° | 2841 | 2834  | 2829 | 2846  | 2832 | 270  |
| 180° | 2846 | 2846  | 2846 | 2846  | 2846 |      |



TEST NUMBER: P907268

CATALOG NUMBER: DFN2DIP-TR3F0-090D090US835-FLLFL

**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 3501.9 | 3501.9 | 3501.9 | 3501.9 | 3501.9 |
| 2.5°   | 3522.3 | 3505.5 | 3468.4 | 3501.9 | 3495.5 |
| 5°     | 3501.9 | 3488.7 | 3451.6 | 3478.4 | 3471.9 |
| 7.5°   | 3478.4 | 3458.4 | 3421.2 | 3448.4 | 3441.6 |
| 10°    | 3441.6 | 3418.0 | 3377.6 | 3404.4 | 3394.4 |
| 12.5°  | 3390.8 | 3370.8 | 3330.5 | 3347.2 | 3340.5 |
| 15°    | 3333.7 | 3313.7 | 3269.7 | 3283.3 | 3266.5 |
| 17.5°  | 3262.9 | 3242.9 | 3199.0 | 3215.8 | 3199.0 |
| 20°    | 3185.4 | 3165.4 | 3118.2 | 3128.2 | 3115.0 |
| 22.5°  | 3108.2 | 3077.9 | 3033.9 | 3033.9 | 3027.1 |
| 25°    | 3017.1 | 2990.3 | 2933.2 | 2939.6 | 2933.2 |
| 27.5°  | 2916.0 | 2892.4 | 2848.9 | 2838.9 | 2822.1 |
| 30°    | 2815.3 | 2788.1 | 2737.7 | 2727.7 | 2714.2 |
| 32.5°  | 2707.4 | 2687.4 | 2633.4 | 2613.1 | 2599.5 |
| 35°    | 2603.1 | 2569.5 | 2515.5 | 2495.2 | 2478.4 |
| 37.5°  | 2485.2 | 2454.8 | 2400.8 | 2377.3 | 2360.5 |
| 40°    | 2364.0 | 2336.9 | 2282.9 | 2252.9 | 2239.4 |
| 42.5°  | 2246.1 | 2219.0 | 2165.4 | 2131.5 | 2111.5 |
| 45°    | 2118.2 | 2094.7 | 2043.9 | 2007.1 | 1993.6 |
| 47.5°  | 1993.6 | 1970.0 | 1916.0 | 1878.9 | 1858.9 |
| 50°    | 1862.1 | 1845.3 | 1798.1 | 1751.0 | 1734.2 |
| 52.5°  | 1734.2 | 1710.6 | 1667.0 | 1629.9 | 1606.3 |
| 55°    | 1603.1 | 1582.7 | 1542.3 | 1502.0 | 1485.2 |
| 57.5°  | 1471.6 | 1454.8 | 1410.9 | 1370.5 | 1356.9 |
| 60°    | 1340.1 | 1326.9 | 1279.7 | 1242.6 | 1232.6 |
| 62.5°  | 1212.2 | 1188.6 | 1155.0 | 1121.5 | 1107.9 |
| 65°    | 1081.1 | 1060.7 | 1027.1 | 996.8  | 980.0  |
| 67.5°  | 946.4  | 929.3  | 899.2  | 875.7  | 862.1  |
| 70°    | 821.7  | 808.1  | 777.8  | 754.2  | 741.0  |
| 72.5°  | 693.8  | 680.2  | 663.4  | 639.9  | 629.9  |
| 75°    | 565.6  | 559.1  | 542.0  | 522.0  | 528.8  |
| 77.5°  | 451.2  | 437.7  | 430.9  | 420.9  | 410.9  |
| 80°    | 336.9  | 333.3  | 326.5  | 316.5  | 309.8  |
| 82.5°  | 229.0  | 229.0  | 225.8  | 212.2  | 212.2  |
| 85°    | 137.9  | 134.7  | 131.5  | 121.1  | 117.9  |
| 87.5°  | 60.7   | 53.9   | 47.2   | 37.2   | 33.6   |
| 90°    | 2.6    | 30.9   | 84.1   | 78.9   | 81.5   |
| 92.5°  | 53.2   | 72.1   | 74.7   | 77.2   | 77.2   |
| 95°    | 125.3  | 149.3  | 153.6  | 153.6  | 149.3  |
| 97.5°  | 208.5  | 230.8  | 240.3  | 240.3  | 240.3  |
| 100°   | 304.6  | 324.4  | 331.2  | 331.2  | 328.7  |
| 102.5° | 405.9  | 420.5  | 429.9  | 432.5  | 429.9  |
| 105°   | 516.6  | 523.4  | 528.6  | 532.9  | 532.9  |
| 107.5° | 626.4  | 636.7  | 636.7  | 638.4  | 626.4  |
| 110°   | 732.8  | 746.6  | 746.6  | 746.6  | 739.7  |



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**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 847.8  | 862.4  | 859.8  | 853.0  | 847.8  |
| 115°   | 961.1  | 974.8  | 970.5  | 968.0  | 961.1  |
| 117.5° | 1073.5 | 1092.4 | 1080.4 | 1073.5 | 1066.6 |
| 120°   | 1186.8 | 1205.6 | 1186.8 | 1186.8 | 1179.0 |
| 122.5° | 1289.7 | 1313.8 | 1301.8 | 1294.9 | 1289.7 |
| 125°   | 1397.9 | 1419.3 | 1412.5 | 1404.7 | 1402.2 |
| 127.5° | 1503.4 | 1530.0 | 1520.6 | 1510.3 | 1503.4 |
| 130°   | 1602.1 | 1633.0 | 1628.7 | 1623.5 | 1614.1 |
| 132.5° | 1712.8 | 1736.8 | 1738.5 | 1726.5 | 1719.7 |
| 135°   | 1808.0 | 1834.6 | 1839.8 | 1837.2 | 1830.4 |
| 137.5° | 1914.4 | 1935.9 | 1940.2 | 1938.5 | 1928.2 |
| 140°   | 2008.0 | 2029.4 | 2041.4 | 2041.4 | 2032.0 |
| 142.5° | 2104.1 | 2125.5 | 2132.4 | 2135.0 | 2125.5 |
| 145°   | 2195.1 | 2212.2 | 2225.9 | 2228.5 | 2219.1 |
| 147.5° | 2276.6 | 2298.0 | 2308.3 | 2312.6 | 2303.2 |
| 150°   | 2360.7 | 2375.3 | 2384.7 | 2392.4 | 2384.7 |
| 152.5° | 2435.3 | 2449.9 | 2461.9 | 2471.4 | 2461.9 |
| 155°   | 2510.0 | 2516.8 | 2524.6 | 2536.6 | 2528.9 |
| 157.5° | 2574.3 | 2579.5 | 2583.8 | 2600.9 | 2588.9 |
| 160°   | 2631.8 | 2637.0 | 2639.6 | 2654.1 | 2643.8 |
| 162.5° | 2685.0 | 2685.0 | 2687.6 | 2703.9 | 2691.9 |
| 165°   | 2730.5 | 2727.9 | 2727.9 | 2745.1 | 2733.1 |
| 167.5° | 2771.7 | 2764.0 | 2764.0 | 2781.1 | 2769.1 |
| 170°   | 2802.6 | 2795.7 | 2793.2 | 2810.3 | 2795.7 |
| 172.5° | 2824.0 | 2817.2 | 2814.6 | 2831.8 | 2817.2 |
| 175°   | 2841.2 | 2834.3 | 2829.2 | 2846.4 | 2831.8 |
| 177.5° | 2850.6 | 2843.8 | 2838.6 | 2853.2 | 2838.6 |
| 180°   | 2846.4 | 2846.4 | 2846.4 | 2846.4 | 2846.4 |



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**CIE UGR TABLE:**

| Reflectances:   |      |                  |       |       |       |       |                |       |       |       |       |
|-----------------|------|------------------|-------|-------|-------|-------|----------------|-------|-------|-------|-------|
| Ceiling         |      | 0.7              | 0.7   | 0.5   | 0.5   | 0.3   | 0.7            | 0.7   | 0.5   | 0.5   | 0.3   |
| Wall            |      | 0.5              | 0.3   | 0.5   | 0.3   | 0.3   | 0.5            | 0.3   | 0.5   | 0.3   | 0.3   |
| Reference plane |      | 0.2              | 0.2   | 0.2   | 0.2   | 0.2   | 0.2            | 0.2   | 0.2   | 0.2   | 0.2   |
| Room dimensions |      | Viewed crosswise |       |       |       |       | Viewed endwise |       |       |       |       |
| X=2H            | Y=2H | 12.60            | 13.48 | 13.53 | 14.43 | 15.66 | 12.17          | 13.06 | 13.10 | 14.01 | 15.24 |
|                 | 3H   | 14.25            | 15.05 | 15.19 | 16.01 | 17.26 | 13.78          | 14.58 | 14.73 | 15.54 | 16.79 |
|                 | 4H   | 14.83            | 15.59 | 15.79 | 16.55 | 17.81 | 14.37          | 15.12 | 15.32 | 16.08 | 17.34 |
|                 | 6H   | 15.23            | 15.92 | 16.20 | 16.89 | 18.17 | 14.76          | 15.45 | 15.73 | 16.42 | 17.70 |
|                 | 8H   | 15.33            | 15.99 | 16.30 | 16.98 | 18.25 | 14.86          | 15.52 | 15.84 | 16.51 | 17.78 |
|                 | 12H  | 15.37            | 16.00 | 16.36 | 16.98 | 18.28 | 14.90          | 15.53 | 15.88 | 16.51 | 17.81 |
| 4H              | 2H   | 13.06            | 13.81 | 14.02 | 14.78 | 16.04 | 12.72          | 13.47 | 13.68 | 14.43 | 15.70 |
|                 | 3H   | 14.92            | 15.55 | 15.89 | 16.54 | 17.81 | 14.53          | 15.16 | 15.50 | 16.15 | 17.43 |
|                 | 4H   | 15.62            | 16.20 | 16.61 | 17.19 | 18.49 | 15.22          | 15.80 | 16.21 | 16.78 | 18.09 |
|                 | 6H   | 16.13            | 16.63 | 17.13 | 17.64 | 18.94 | 15.73          | 16.22 | 16.72 | 17.23 | 18.53 |
|                 | 8H   | 16.28            | 16.74 | 17.27 | 17.74 | 19.06 | 15.87          | 16.33 | 16.87 | 17.34 | 18.65 |
|                 | 12H  | 16.35            | 16.77 | 17.36 | 17.78 | 19.10 | 15.93          | 16.35 | 16.95 | 17.37 | 18.69 |
| 8H              | 4H   | 15.82            | 16.28 | 16.82 | 17.29 | 18.60 | 15.46          | 15.93 | 16.46 | 16.93 | 18.24 |
|                 | 6H   | 16.44            | 16.82 | 17.46 | 17.87 | 19.18 | 16.08          | 16.47 | 17.10 | 17.51 | 18.82 |
|                 | 8H   | 16.65            | 16.99 | 17.68 | 18.02 | 19.35 | 16.29          | 16.63 | 17.32 | 17.66 | 18.99 |
|                 | 12H  | 16.78            | 17.08 | 17.81 | 18.10 | 19.48 | 16.40          | 16.70 | 17.44 | 17.73 | 19.10 |
| 12H             | 4H   | 15.81            | 16.22 | 16.82 | 17.24 | 18.56 | 15.46          | 15.87 | 16.47 | 16.89 | 18.21 |
|                 | 6H   | 16.47            | 16.81 | 17.50 | 17.84 | 19.17 | 16.12          | 16.46 | 17.15 | 17.49 | 18.82 |
|                 | 8H   | 16.70            | 17.00 | 17.74 | 18.03 | 19.40 | 16.35          | 16.65 | 17.39 | 17.68 | 19.05 |