

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: P910136

Luminaire Tested: DFN2DIP-TR4F0-070D110US840-RLLFLL

Issue Date: 11/21/2024

**Test Information**

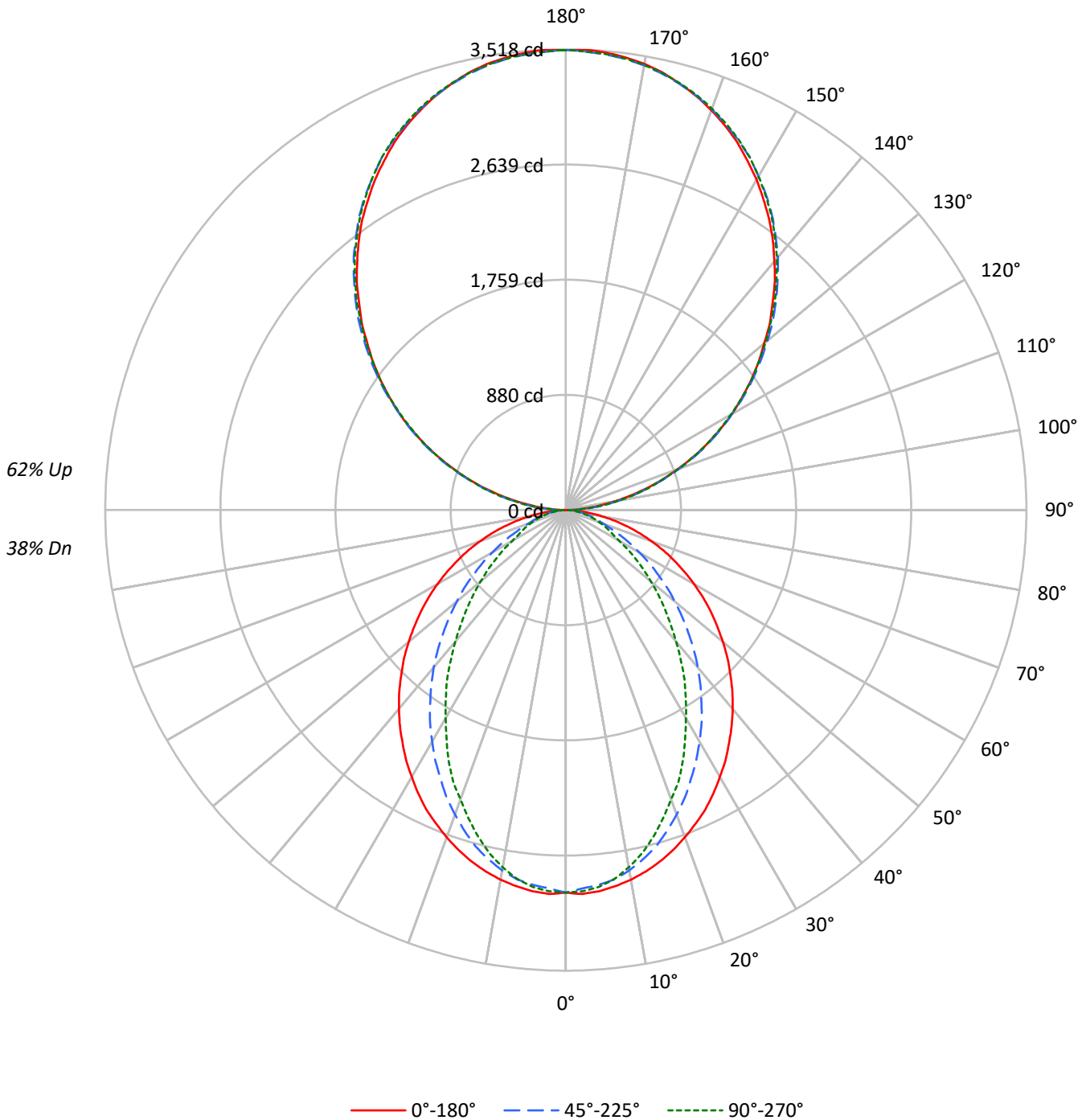
Test Method: LM-79-2019  
Report Number: P910136  
REPORT IS A COMBINATION OF REPORTS P900502 AND P897293  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-TR4F0-070D110US840-RLLFLL  
Description: 4 foot, Triangle Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 15839.7 lumens  
Efficiency: N/A  
Efficacy: 105.4 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16  
Luminous Opening: Rectangular w/ Sides (W: 3.43' x L: 3.96' x H: 0.1')  
CIE Type: Semi-Indirect  
  
Input Watts (W): 150.3  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9977  
Total Harmonic Distortion (THDi): 0.049  
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





TEST NUMBER: P910136

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

|     |     |     |     |     |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
|-----|-----|-----|-----|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| RF  | 20  |     |     |     | 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   | 104 | 104 | 104 | 104 | 95 | 95 | 95 | 95 | 77 | 77 | 77 | 60 | 60 | 60 | 45 | 45 | 45 | 38 |    |    |    | 38 |
| 1   | 95  | 91  | 88  | 84  | 87 | 83 | 80 | 77 | 68 | 66 | 64 | 53 | 52 | 51 | 40 | 40 | 39 | 33 |    |    |    | 33 |
| 2   | 87  | 80  | 74  | 69  | 79 | 73 | 68 | 64 | 60 | 56 | 53 | 47 | 45 | 43 | 36 | 34 | 33 | 28 |    |    |    | 28 |
| 3   | 80  | 71  | 64  | 58  | 72 | 65 | 59 | 54 | 53 | 49 | 45 | 42 | 39 | 37 | 32 | 30 | 29 | 24 |    |    |    | 24 |
| 4   | 73  | 63  | 55  | 49  | 66 | 57 | 51 | 46 | 47 | 42 | 39 | 38 | 34 | 32 | 29 | 27 | 25 | 21 |    |    |    | 21 |
| 5   | 67  | 56  | 48  | 43  | 61 | 51 | 45 | 40 | 42 | 37 | 34 | 34 | 30 | 28 | 26 | 24 | 22 | 19 |    |    |    | 19 |
| 6   | 62  | 50  | 43  | 37  | 56 | 46 | 39 | 34 | 38 | 33 | 29 | 31 | 27 | 24 | 24 | 21 | 20 | 16 |    |    |    | 16 |
| 7   | 57  | 45  | 38  | 32  | 52 | 42 | 35 | 30 | 35 | 30 | 26 | 28 | 24 | 22 | 22 | 19 | 17 | 15 |    |    |    | 15 |
| 8   | 53  | 41  | 34  | 29  | 48 | 38 | 31 | 27 | 32 | 27 | 23 | 26 | 22 | 19 | 20 | 18 | 16 | 13 |    |    |    | 13 |
| 9   | 49  | 38  | 30  | 26  | 45 | 35 | 28 | 24 | 29 | 24 | 21 | 24 | 20 | 17 | 19 | 16 | 14 | 12 |    |    |    | 12 |
| 10  | 46  | 35  | 28  | 23  | 42 | 32 | 26 | 22 | 27 | 22 | 19 | 22 | 18 | 16 | 17 | 15 | 13 | 11 |    |    |    | 11 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 2321 | 2321 | 2321 |
| 5°  | 2325 | 2284 | 2299 |
| 10° | 2302 | 2239 | 2224 |
| 15° | 2270 | 2165 | 2108 |
| 20° | 2228 | 2063 | 1966 |
| 25° | 2185 | 1949 | 1829 |
| 30° | 2128 | 1832 | 1655 |
| 35° | 2071 | 1706 | 1503 |
| 40° | 2014 | 1575 | 1327 |
| 45° | 1947 | 1430 | 1169 |
| 50° | 1878 | 1284 | 1014 |
| 55° | 1806 | 1128 | 865  |
| 60° | 1723 | 965  | 712  |
| 65° | 1627 | 799  | 641  |
| 70° | 1510 | 644  | 580  |
| 75° | 1365 | 568  | 527  |
| 80° | 1153 | 476  | 457  |
| 85° | 803  | 318  | 343  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 90°  
 Vertical Angle: 90°  
 Luminance: 2738 cd/sqm



TEST NUMBER: P910136

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**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 273.8   | 1.7       |
| 10°-20°   | 751.7   | 4.7       |
| 20°-30°   | 1055.3  | 6.7       |
| 30°-40°   | 1150.4  | 7.3       |
| 40°-50°   | 1057.3  | 6.7       |
| 50°-60°   | 830.4   | 5.2       |
| 60°-70°   | 540.5   | 3.4       |
| 70°-80°   | 278.2   | 1.8       |
| 80°-90°   | 81.0    | 0.5       |
| 90°-100°  | 217.4   | 1.4       |
| 100°-110° | 690.8   | 4.4       |
| 110°-120° | 1182.1  | 7.5       |
| 120°-130° | 1554.6  | 9.8       |
| 130°-140° | 1745.0  | 11.0      |
| 140°-150° | 1711.2  | 10.8      |
| 150°-160° | 1435.4  | 9.1       |
| 160°-170° | 951.9   | 6.0       |
| 170°-180° | 332.7   | 2.1       |
| 0°-30°    | 2080.9  | 13.1      |
| 0°-40°    | 3231.2  | 20.4      |
| 0°-60°    | 5118.9  | 32.3      |
| 0°-90°    | 6018.6  | 38.0      |
| 90°-120°  | 2090.2  | 13.2      |
| 90°-150°  | 7101.0  | 44.8      |
| 90°-180°  | 9821.0  | 62.0      |
| 0°-180°   | 15839.7 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 2922 | 2922  | 2922 | 2922  | 2922 |      |
| 5°   | 2922 | 2908  | 2874 | 2898  | 2890 | 277  |
| 15°  | 2779 | 2750  | 2660 | 2610  | 2583 | 783  |
| 25°  | 2522 | 2438  | 2263 | 2155  | 2115 | 1160 |
| 35°  | 2173 | 2038  | 1806 | 1639  | 1581 | 1360 |
| 45°  | 1777 | 1600  | 1322 | 1134  | 1071 | 1372 |
| 55°  | 1351 | 1145  | 859  | 701   | 651  | 1207 |
| 65°  | 912  | 698   | 460  | 370   | 362  | 904  |
| 75°  | 486  | 301   | 212  | 193   | 190  | 515  |
| 85°  | 114  | 58    | 50   | 50    | 50   | 130  |
| 90°  | 3    | 38    | 104  | 98    | 101  | 16   |
| 95°  | 155  | 184   | 190  | 190   | 184  | 172  |
| 105° | 638  | 646   | 652  | 658   | 658  | 673  |
| 115° | 1186 | 1203  | 1198 | 1195  | 1186 | 1173 |
| 125° | 1725 | 1752  | 1743 | 1734  | 1731 | 1542 |
| 135° | 2232 | 2264  | 2271 | 2268  | 2259 | 1725 |
| 145° | 2709 | 2730  | 2747 | 2751  | 2739 | 1693 |
| 155° | 3098 | 3106  | 3116 | 3131  | 3121 | 1426 |
| 165° | 3370 | 3367  | 3367 | 3388  | 3373 | 951  |
| 175° | 3507 | 3498  | 3492 | 3513  | 3495 | 333  |
| 180° | 3513 | 3513  | 3513 | 3513  | 3513 |      |



TEST NUMBER: P910136

CATALOG NUMBER: DFN2DIP-TR4F0-070D110US840-RLLFLL

**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 2921.6 | 2921.6 | 2921.6 | 2921.6 | 2921.6 |
| 2.5°   | 2934.8 | 2921.6 | 2892.5 | 2919.1 | 2913.8 |
| 5°     | 2921.6 | 2908.4 | 2874.0 | 2897.8 | 2889.9 |
| 7.5°   | 2897.8 | 2882.1 | 2845.1 | 2855.4 | 2842.3 |
| 10°    | 2866.1 | 2847.6 | 2794.8 | 2786.7 | 2771.0 |
| 12.5°  | 2826.5 | 2802.7 | 2731.2 | 2715.4 | 2686.2 |
| 15°    | 2778.8 | 2749.7 | 2659.9 | 2609.7 | 2583.3 |
| 17.5°  | 2723.3 | 2681.0 | 2569.9 | 2511.7 | 2469.4 |
| 20°    | 2659.9 | 2606.9 | 2474.8 | 2408.8 | 2350.5 |
| 22.5°  | 2591.2 | 2530.3 | 2376.8 | 2287.0 | 2247.6 |
| 25°    | 2522.4 | 2437.7 | 2263.2 | 2155.0 | 2115.2 |
| 27.5°  | 2440.5 | 2350.5 | 2157.5 | 2033.3 | 1972.4 |
| 30°    | 2353.3 | 2252.6 | 2041.0 | 1906.4 | 1834.9 |
| 32.5°  | 2268.6 | 2146.9 | 1930.3 | 1771.5 | 1705.3 |
| 35°    | 2173.4 | 2038.5 | 1806.0 | 1639.4 | 1581.0 |
| 37.5°  | 2080.9 | 1935.3 | 1689.6 | 1506.9 | 1441.1 |
| 40°    | 1983.0 | 1824.5 | 1567.8 | 1380.2 | 1311.4 |
| 42.5°  | 1882.6 | 1713.4 | 1446.3 | 1250.5 | 1184.7 |
| 45°    | 1776.9 | 1599.5 | 1322.1 | 1134.2 | 1070.8 |
| 47.5°  | 1676.4 | 1488.7 | 1203.2 | 1015.2 | 957.2  |
| 50°    | 1565.3 | 1377.7 | 1086.7 | 904.1  | 848.9  |
| 52.5°  | 1456.7 | 1258.4 | 975.6  | 801.1  | 750.9  |
| 55°    | 1351.0 | 1144.8 | 859.2  | 700.7  | 650.6  |
| 57.5°  | 1242.7 | 1031.2 | 756.3  | 608.1  | 565.8  |
| 60°    | 1131.7 | 920.1  | 647.7  | 513.1  | 470.7  |
| 62.5°  | 1023.3 | 811.8  | 555.1  | 428.4  | 407.3  |
| 65°    | 912.2  | 697.9  | 460.1  | 370.3  | 362.1  |
| 67.5°  | 806.5  | 592.2  | 370.3  | 325.1  | 317.3  |
| 70°    | 695.4  | 489.2  | 306.6  | 280.2  | 269.5  |
| 72.5°  | 589.7  | 393.8  | 256.4  | 235.4  | 230.0  |
| 75°    | 486.5  | 301.2  | 211.5  | 193.0  | 190.5  |
| 77.5°  | 383.4  | 214.0  | 166.6  | 155.9  | 150.7  |
| 80°    | 288.1  | 153.4  | 126.8  | 116.4  | 116.4  |
| 82.5°  | 200.9  | 103.2  | 87.3   | 81.9   | 81.9   |
| 85°    | 113.6  | 58.1   | 50.2   | 50.2   | 50.2   |
| 87.5°  | 42.3   | 21.0   | 21.0   | 18.5   | 18.5   |
| 90°    | 3.1    | 38.2   | 103.8  | 97.5   | 100.6  |
| 92.5°  | 65.6   | 89.0   | 92.1   | 95.3   | 95.3   |
| 95°    | 154.6  | 184.3  | 189.6  | 189.6  | 184.3  |
| 97.5°  | 257.4  | 284.9  | 296.6  | 296.6  | 296.6  |
| 100°   | 376.0  | 400.3  | 408.8  | 408.8  | 405.7  |
| 102.5° | 501.0  | 519.0  | 530.7  | 533.8  | 530.7  |
| 105°   | 637.6  | 646.1  | 652.5  | 657.7  | 657.7  |
| 107.5° | 773.2  | 785.9  | 785.9  | 788.0  | 773.2  |
| 110°   | 904.5  | 921.5  | 921.5  | 921.5  | 913.0  |



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**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 1046.4 | 1064.4 | 1061.3 | 1052.8 | 1046.4 |
| 115°   | 1186.3 | 1203.2 | 1197.9 | 1194.8 | 1186.3 |
| 117.5° | 1325.0 | 1348.3 | 1333.4 | 1325.0 | 1316.6 |
| 120°   | 1464.8 | 1488.1 | 1464.8 | 1464.8 | 1455.3 |
| 122.5° | 1592.0 | 1621.5 | 1606.7 | 1598.2 | 1592.0 |
| 125°   | 1725.4 | 1751.8 | 1743.3 | 1733.8 | 1730.6 |
| 127.5° | 1855.6 | 1888.4 | 1876.8 | 1864.1 | 1855.6 |
| 130°   | 1977.4 | 2015.6 | 2010.2 | 2003.9 | 1992.3 |
| 132.5° | 2114.1 | 2143.7 | 2145.9 | 2131.0 | 2122.5 |
| 135°   | 2231.6 | 2264.4 | 2270.8 | 2267.7 | 2259.2 |
| 137.5° | 2363.0 | 2389.4 | 2394.7 | 2392.6 | 2380.0 |
| 140°   | 2478.4 | 2504.9 | 2519.7 | 2519.7 | 2508.1 |
| 142.5° | 2597.1 | 2623.5 | 2632.0 | 2635.1 | 2623.5 |
| 145°   | 2709.3 | 2730.5 | 2747.4 | 2750.6 | 2739.0 |
| 147.5° | 2810.0 | 2836.4 | 2849.1 | 2854.4 | 2842.8 |
| 150°   | 2913.8 | 2931.7 | 2943.4 | 2952.9 | 2943.4 |
| 152.5° | 3005.9 | 3023.8 | 3038.7 | 3050.4 | 3038.7 |
| 155°   | 3098.1 | 3106.4 | 3116.0 | 3130.9 | 3121.3 |
| 157.5° | 3177.4 | 3183.8 | 3189.1 | 3210.3 | 3195.4 |
| 160°   | 3248.4 | 3254.8 | 3257.9 | 3276.0 | 3263.3 |
| 162.5° | 3314.1 | 3314.1 | 3317.3 | 3337.4 | 3322.6 |
| 165°   | 3370.2 | 3367.0 | 3367.0 | 3388.2 | 3373.4 |
| 167.5° | 3421.0 | 3411.5 | 3411.5 | 3432.7 | 3417.9 |
| 170°   | 3459.2 | 3450.7 | 3447.6 | 3468.7 | 3450.7 |
| 172.5° | 3485.7 | 3477.2 | 3474.0 | 3495.2 | 3477.2 |
| 175°   | 3506.9 | 3498.4 | 3492.0 | 3513.2 | 3495.2 |
| 177.5° | 3518.5 | 3510.0 | 3503.6 | 3521.7 | 3503.6 |
| 180°   | 3513.2 | 3513.2 | 3513.2 | 3513.2 | 3513.2 |



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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 | 8.83             | 9.57  | 9.89  | 10.63 | 12.07 | 4.80           | 5.54 | 5.86 | 6.60 | 8.04  |
|                 | 3H   | 10.50            | 11.16 | 11.57 | 12.23 | 13.68 | 5.99           | 6.65 | 7.05 | 7.72 | 9.17  |
|                 | 4H   | 11.10            | 11.73 | 12.18 | 12.80 | 14.26 | 6.43           | 7.06 | 7.51 | 8.13 | 9.59  |
|                 | 6H   | 11.52            | 12.10 | 12.61 | 13.17 | 14.64 | 6.75           | 7.33 | 7.84 | 8.40 | 9.87  |
|                 | 8H   | 11.65            | 12.19 | 12.74 | 13.28 | 14.75 | 6.84           | 7.39 | 7.93 | 8.48 | 9.94  |
|                 | 12H  | 11.70            | 12.23 | 12.80 | 13.31 | 14.80 | 6.88           | 7.40 | 7.98 | 8.48 | 9.97  |
| 4H              | 2H   | 8.84             | 9.47  | 9.92  | 10.53 | 12.00 | 5.39           | 6.02 | 6.47 | 7.08 | 8.55  |
|                 | 3H   | 10.66            | 11.18 | 11.75 | 12.28 | 13.75 | 6.73           | 7.25 | 7.82 | 8.35 | 9.82  |
|                 | 4H   | 11.35            | 11.83 | 12.45 | 12.91 | 14.41 | 7.28           | 7.75 | 8.37 | 8.84 | 10.34 |
|                 | 6H   | 11.86            | 12.27 | 12.96 | 13.38 | 14.86 | 7.69           | 8.10 | 8.80 | 9.21 | 10.70 |
|                 | 8H   | 12.03            | 12.41 | 13.14 | 13.52 | 15.02 | 7.82           | 8.20 | 8.92 | 9.30 | 10.81 |
|                 | 12H  | 12.12            | 12.47 | 13.24 | 13.58 | 15.09 | 7.88           | 8.23 | 9.00 | 9.34 | 10.85 |
| 8H              | 4H   | 11.31            | 11.69 | 12.41 | 12.79 | 14.30 | 7.55           | 7.93 | 8.66 | 9.03 | 10.54 |
|                 | 6H   | 11.87            | 12.19 | 13.00 | 13.33 | 14.83 | 8.07           | 8.38 | 9.19 | 9.53 | 11.03 |
|                 | 8H   | 12.09            | 12.36 | 13.22 | 13.49 | 15.01 | 8.26           | 8.53 | 9.39 | 9.66 | 11.18 |
|                 | 12H  | 12.22            | 12.46 | 13.36 | 13.59 | 15.14 | 8.37           | 8.62 | 9.51 | 9.74 | 11.29 |
| 12H             | 4H   | 11.26            | 11.60 | 12.38 | 12.72 | 14.23 | 7.55           | 7.90 | 8.67 | 9.01 | 10.52 |
|                 | 6H   | 11.85            | 12.12 | 12.98 | 13.25 | 14.77 | 8.11           | 8.39 | 9.25 | 9.52 | 11.04 |
|                 | 8H   | 12.06            | 12.31 | 13.20 | 13.43 | 14.98 | 8.32           | 8.56 | 9.46 | 9.69 | 11.24 |