

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: P917026

Luminaire Tested: DFN2DIP-PN4F0-100D100US930-RLLFLL

Issue Date: 11/21/2024

**Test Information**

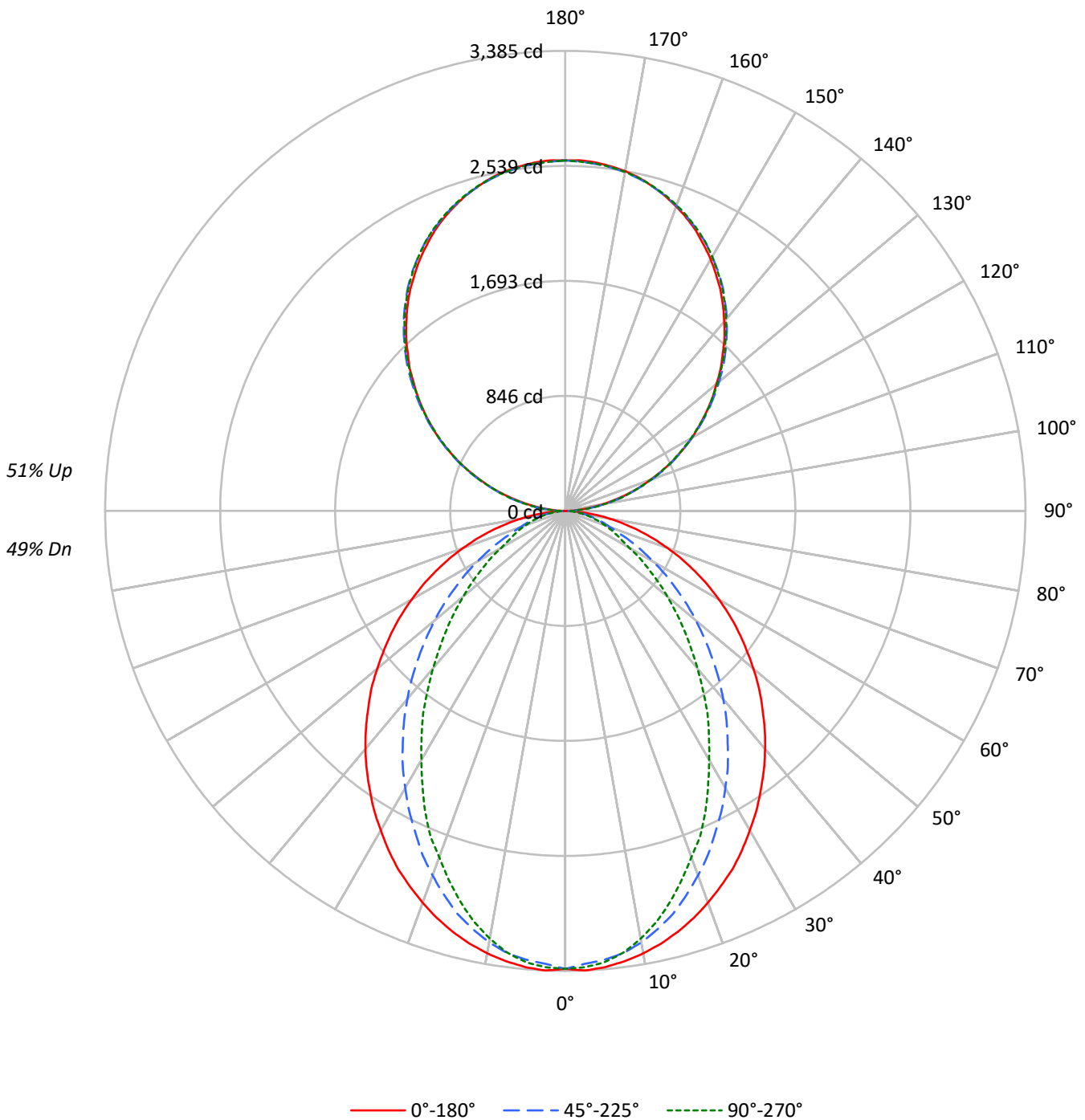
Test Method: LM-79-2019  
Report Number: P917026  
REPORT IS A COMBINATION OF REPORTS P899730 AND P896497  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-PN4F0-100D100US930-RLLFLL  
Description: 4 foot, Pentagon Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 14145.5 lumens  
Efficiency: N/A  
Efficacy: 80.4 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16  
Luminous Opening: Rectangular w/ Sides (W: 3.74' x L: 3.94' x H: 0.1')  
CIE Type: General Diffuse  
  
Input Watts (W): 175.9  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9952  
Total Harmonic Distortion (THDi): 0.069  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT

TEST NUMBER: P917026  
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### Luminous Intensity Polar Plot



51% Up  
49% Dn



TEST NUMBER: P917026

CATALOG NUMBER: DFN2DIP-PN4F0-100D100US930-RLLFLL

**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   | 107 | 107 | 107 | 107 | 99 | 99 | 99 | 99 | 83 | 83 | 83 | 68 | 68 | 68 | 55 | 55 | 55 | 49 |    |    |    | 49 |
| 1   | 98  | 94  | 90  | 87  | 90 | 87 | 84 | 81 | 73 | 71 | 69 | 61 | 59 | 58 | 50 | 49 | 48 | 42 |    |    |    | 42 |
| 2   | 90  | 83  | 77  | 72  | 82 | 76 | 71 | 67 | 65 | 61 | 58 | 54 | 51 | 49 | 44 | 42 | 41 | 36 |    |    |    | 36 |
| 3   | 82  | 73  | 66  | 60  | 75 | 68 | 61 | 57 | 58 | 53 | 49 | 48 | 45 | 42 | 40 | 37 | 35 | 31 |    |    |    | 31 |
| 4   | 75  | 65  | 57  | 51  | 69 | 60 | 54 | 48 | 51 | 46 | 42 | 43 | 40 | 36 | 36 | 33 | 31 | 27 |    |    |    | 27 |
| 5   | 69  | 58  | 50  | 44  | 64 | 54 | 47 | 42 | 46 | 41 | 37 | 39 | 35 | 32 | 32 | 29 | 27 | 24 |    |    |    | 24 |
| 6   | 64  | 52  | 44  | 39  | 59 | 49 | 42 | 37 | 42 | 36 | 32 | 35 | 31 | 28 | 30 | 26 | 24 | 21 |    |    |    | 21 |
| 7   | 59  | 47  | 40  | 34  | 55 | 44 | 37 | 32 | 38 | 33 | 29 | 32 | 28 | 25 | 27 | 24 | 22 | 19 |    |    |    | 19 |
| 8   | 55  | 43  | 36  | 30  | 51 | 40 | 33 | 29 | 35 | 29 | 26 | 30 | 26 | 23 | 25 | 22 | 20 | 17 |    |    |    | 17 |
| 9   | 51  | 39  | 32  | 27  | 47 | 37 | 30 | 26 | 32 | 27 | 23 | 27 | 23 | 20 | 23 | 20 | 18 | 16 |    |    |    | 16 |
| 10  | 48  | 36  | 29  | 24  | 44 | 34 | 28 | 23 | 30 | 24 | 21 | 25 | 21 | 19 | 22 | 18 | 16 | 14 |    |    |    | 14 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 2460 | 2460 | 2460 |
| 5°  | 2464 | 2421 | 2437 |
| 10° | 2439 | 2374 | 2358 |
| 15° | 2406 | 2296 | 2236 |
| 20° | 2361 | 2188 | 2086 |
| 25° | 2316 | 2067 | 1941 |
| 30° | 2255 | 1943 | 1757 |
| 35° | 2195 | 1809 | 1595 |
| 40° | 2134 | 1671 | 1410 |
| 45° | 2063 | 1518 | 1242 |
| 50° | 1990 | 1364 | 1077 |
| 55° | 1914 | 1198 | 920  |
| 60° | 1825 | 1025 | 758  |
| 65° | 1723 | 849  | 682  |
| 70° | 1600 | 685  | 618  |
| 75° | 1445 | 605  | 563  |
| 80° | 1221 | 509  | 490  |
| 85° | 850  | 341  | 372  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
 Vertical Angle: 45°  
 Luminance: 2063 cd/sqm



TEST NUMBER: P917026

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**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 315.8   | 2.2       |
| 10°-20°   | 866.9   | 6.1       |
| 20°-30°   | 1217.2  | 8.6       |
| 30°-40°   | 1326.8  | 9.4       |
| 40°-50°   | 1219.5  | 8.6       |
| 50°-60°   | 957.7   | 6.8       |
| 60°-70°   | 623.4   | 4.4       |
| 70°-80°   | 320.9   | 2.3       |
| 80°-90°   | 89.2    | 0.6       |
| 90°-100°  | 159.6   | 1.1       |
| 100°-110° | 507.0   | 3.6       |
| 110°-120° | 867.6   | 6.1       |
| 120°-130° | 1141.0  | 8.1       |
| 130°-140° | 1280.7  | 9.1       |
| 140°-150° | 1255.9  | 8.9       |
| 150°-160° | 1053.5  | 7.4       |
| 160°-170° | 698.7   | 4.9       |
| 170°-180° | 244.2   | 1.7       |
| 0°-30°    | 2399.9  | 17.0      |
| 0°-40°    | 3726.7  | 26.3      |
| 0°-60°    | 5903.9  | 41.7      |
| 0°-90°    | 6937.4  | 49.0      |
| 90°-120°  | 1534.1  | 10.8      |
| 90°-150°  | 5211.7  | 36.8      |
| 90°-180°  | 7208.0  | 51.0      |
| 0°-180°   | 14145.5 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 3370 | 3370  | 3370 | 3370  | 3370 |      |
| 5°   | 3370 | 3354  | 3315 | 3342  | 3333 | 320  |
| 15°  | 3205 | 3171  | 3068 | 3010  | 2979 | 903  |
| 25°  | 2909 | 2812  | 2610 | 2485  | 2440 | 1338 |
| 35°  | 2507 | 2351  | 2083 | 1891  | 1823 | 1569 |
| 45°  | 2049 | 1845  | 1525 | 1308  | 1235 | 1583 |
| 55°  | 1558 | 1320  | 991  | 808   | 750  | 1392 |
| 65°  | 1052 | 805   | 531  | 427   | 418  | 1043 |
| 75°  | 561  | 348   | 244  | 223   | 220  | 593  |
| 85°  | 131  | 67    | 58   | 58    | 58   | 150  |
| 90°  | 2    | 28    | 76   | 72    | 74   | 14   |
| 95°  | 114  | 135   | 139  | 139   | 135  | 126  |
| 105° | 468  | 474   | 479  | 483   | 483  | 494  |
| 115° | 871  | 883   | 879  | 877   | 871  | 861  |
| 125° | 1266 | 1286  | 1280 | 1272  | 1270 | 1132 |
| 135° | 1638 | 1662  | 1667 | 1664  | 1658 | 1266 |
| 145° | 1988 | 2004  | 2016 | 2019  | 2010 | 1242 |
| 155° | 2274 | 2280  | 2287 | 2298  | 2291 | 1047 |
| 165° | 2474 | 2471  | 2471 | 2487  | 2476 | 698  |
| 175° | 2574 | 2568  | 2563 | 2578  | 2565 | 245  |
| 180° | 2578 | 2578  | 2578 | 2578  | 2578 |      |



TEST NUMBER: P917026

CATALOG NUMBER: DFN2DIP-PN4F0-100D100US930-RLFL

**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 3369.6 | 3369.6 | 3369.6 | 3369.6 | 3369.6 |
| 2.5°   | 3384.8 | 3369.6 | 3336.0 | 3366.7 | 3360.6 |
| 5°     | 3369.6 | 3354.4 | 3314.6 | 3342.2 | 3333.0 |
| 7.5°   | 3342.2 | 3324.0 | 3281.2 | 3293.2 | 3278.1 |
| 10°    | 3305.5 | 3284.2 | 3223.4 | 3214.0 | 3195.9 |
| 12.5°  | 3260.0 | 3232.4 | 3149.9 | 3131.8 | 3098.1 |
| 15°    | 3204.9 | 3171.3 | 3067.7 | 3009.8 | 2979.4 |
| 17.5°  | 3140.9 | 3092.0 | 2963.9 | 2896.9 | 2848.1 |
| 20°    | 3067.7 | 3006.6 | 2854.2 | 2778.2 | 2710.9 |
| 22.5°  | 2988.5 | 2918.3 | 2741.3 | 2637.8 | 2592.2 |
| 25°    | 2909.2 | 2811.6 | 2610.3 | 2485.4 | 2439.5 |
| 27.5°  | 2814.7 | 2710.9 | 2488.3 | 2345.0 | 2274.8 |
| 30°    | 2714.1 | 2597.9 | 2354.0 | 2198.8 | 2116.3 |
| 32.5°  | 2616.5 | 2476.0 | 2226.3 | 2043.1 | 1966.7 |
| 35°    | 2506.7 | 2351.2 | 2082.9 | 1890.8 | 1823.4 |
| 37.5°  | 2400.0 | 2232.0 | 1948.6 | 1738.1 | 1662.0 |
| 40°    | 2287.1 | 2104.3 | 1808.2 | 1591.8 | 1512.5 |
| 42.5°  | 2171.2 | 1976.1 | 1668.2 | 1442.3 | 1366.3 |
| 45°    | 2049.3 | 1844.8 | 1524.9 | 1308.1 | 1234.9 |
| 47.5°  | 1933.5 | 1717.0 | 1387.6 | 1170.8 | 1103.9 |
| 50°    | 1805.3 | 1588.9 | 1253.4 | 1042.8 | 979.0  |
| 52.5°  | 1680.1 | 1451.4 | 1125.3 | 924.0  | 866.1  |
| 55°    | 1558.1 | 1320.4 | 991.0  | 808.2  | 750.2  |
| 57.5°  | 1433.3 | 1189.3 | 872.3  | 701.4  | 652.6  |
| 60°    | 1305.1 | 1061.2 | 747.1  | 591.7  | 542.9  |
| 62.5°  | 1180.2 | 936.3  | 640.3  | 494.1  | 469.8  |
| 65°    | 1052.1 | 804.9  | 530.6  | 427.1  | 417.7  |
| 67.5°  | 930.2  | 683.0  | 427.1  | 375.0  | 365.9  |
| 70°    | 802.0  | 564.3  | 353.6  | 323.2  | 311.0  |
| 72.5°  | 680.0  | 454.2  | 295.7  | 271.4  | 265.3  |
| 75°    | 561.0  | 347.5  | 243.9  | 222.6  | 219.6  |
| 77.5°  | 442.3  | 246.9  | 192.2  | 179.9  | 173.7  |
| 80°    | 332.2  | 177.0  | 146.3  | 134.3  | 134.3  |
| 82.5°  | 231.6  | 119.0  | 100.6  | 94.5   | 94.5   |
| 85°    | 131.0  | 66.9   | 57.9   | 57.9   | 57.9   |
| 87.5°  | 48.8   | 24.3   | 24.3   | 21.4   | 21.4   |
| 90°    | 2.4    | 28.0   | 76.1   | 71.5   | 73.9   |
| 92.5°  | 48.2   | 65.3   | 67.7   | 70.0   | 70.0   |
| 95°    | 113.5  | 135.3  | 139.2  | 139.2  | 135.3  |
| 97.5°  | 188.9  | 209.1  | 217.7  | 217.7  | 217.7  |
| 100°   | 276.0  | 293.8  | 300.0  | 300.0  | 297.7  |
| 102.5° | 367.7  | 380.9  | 389.5  | 391.8  | 389.5  |
| 105°   | 468.0  | 474.2  | 478.8  | 482.7  | 482.7  |
| 107.5° | 567.4  | 576.8  | 576.8  | 578.4  | 567.4  |
| 110°   | 663.9  | 676.3  | 676.3  | 676.3  | 670.1  |



TEST NUMBER: P917026

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**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 768.0  | 781.2  | 778.9  | 772.7  | 768.0  |
| 115°   | 870.7  | 883.0  | 879.2  | 876.9  | 870.7  |
| 117.5° | 972.5  | 989.6  | 978.7  | 972.5  | 966.2  |
| 120°   | 1075.1 | 1092.2 | 1075.1 | 1075.1 | 1068.1 |
| 122.5° | 1168.3 | 1190.1 | 1179.2 | 1173.1 | 1168.3 |
| 125°   | 1266.3 | 1285.7 | 1279.5 | 1272.5 | 1270.2 |
| 127.5° | 1362.0 | 1386.0 | 1377.4 | 1368.2 | 1362.0 |
| 130°   | 1451.3 | 1479.3 | 1475.4 | 1470.7 | 1462.2 |
| 132.5° | 1551.6 | 1573.4 | 1574.9 | 1564.1 | 1557.8 |
| 135°   | 1637.9 | 1662.0 | 1666.6 | 1664.3 | 1658.1 |
| 137.5° | 1734.3 | 1753.7 | 1757.6 | 1756.1 | 1746.7 |
| 140°   | 1819.0 | 1838.4 | 1849.3 | 1849.3 | 1840.8 |
| 142.5° | 1906.1 | 1925.5 | 1931.7 | 1934.1 | 1925.5 |
| 145°   | 1988.4 | 2004.0 | 2016.5 | 2018.8 | 2010.2 |
| 147.5° | 2062.3 | 2081.8 | 2091.1 | 2095.0 | 2086.4 |
| 150°   | 2138.5 | 2151.7 | 2160.3 | 2167.2 | 2160.3 |
| 152.5° | 2206.1 | 2219.3 | 2230.2 | 2238.8 | 2230.2 |
| 155°   | 2273.8 | 2280.0 | 2287.0 | 2297.8 | 2290.8 |
| 157.5° | 2332.1 | 2336.7 | 2340.6 | 2356.1 | 2345.3 |
| 160°   | 2384.2 | 2388.8 | 2391.1 | 2404.3 | 2395.0 |
| 162.5° | 2432.4 | 2432.4 | 2434.6 | 2449.4 | 2438.6 |
| 165°   | 2473.5 | 2471.2 | 2471.2 | 2486.7 | 2475.9 |
| 167.5° | 2510.9 | 2503.9 | 2503.9 | 2519.4 | 2508.5 |
| 170°   | 2538.8 | 2532.6 | 2530.3 | 2545.9 | 2532.6 |
| 172.5° | 2558.2 | 2552.0 | 2549.7 | 2565.3 | 2552.0 |
| 175°   | 2573.8 | 2567.6 | 2563.0 | 2578.5 | 2565.3 |
| 177.5° | 2582.4 | 2576.2 | 2571.5 | 2584.7 | 2571.5 |
| 180°   | 2578.5 | 2578.5 | 2578.5 | 2578.5 | 2578.5 |



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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 | 10.19            | 11.01 | 11.16 | 11.99 | 13.28 | 6.15           | 6.98  | 7.13  | 7.96  | 9.25  |
|                 | 3H   | 11.87            | 12.60 | 12.85 | 13.59 | 14.90 | 7.34           | 8.08  | 8.33  | 9.07  | 10.38 |
|                 | 4H   | 12.48            | 13.17 | 13.48 | 14.17 | 15.49 | 7.79           | 8.49  | 8.79  | 9.48  | 10.80 |
|                 | 6H   | 12.90            | 13.54 | 13.91 | 14.54 | 15.87 | 8.11           | 8.75  | 9.12  | 9.75  | 11.08 |
|                 | 8H   | 13.03            | 13.64 | 14.04 | 14.65 | 15.98 | 8.21           | 8.81  | 9.22  | 9.83  | 11.16 |
|                 | 12H  | 13.09            | 13.67 | 14.11 | 14.68 | 16.03 | 8.25           | 8.83  | 9.27  | 9.84  | 11.19 |
| 4H              | 2H   | 10.21            | 10.90 | 11.21 | 11.90 | 13.21 | 6.75           | 7.45  | 7.75  | 8.44  | 9.76  |
|                 | 3H   | 12.04            | 12.62 | 13.05 | 13.64 | 14.97 | 8.10           | 8.68  | 9.11  | 9.70  | 11.03 |
|                 | 4H   | 12.73            | 13.26 | 13.75 | 14.28 | 15.63 | 8.65           | 9.18  | 9.67  | 10.19 | 11.55 |
|                 | 6H   | 13.25            | 13.70 | 14.28 | 14.74 | 16.09 | 9.07           | 9.52  | 10.10 | 10.56 | 11.91 |
|                 | 8H   | 13.43            | 13.85 | 14.46 | 14.88 | 16.25 | 9.20           | 9.62  | 10.23 | 10.65 | 12.02 |
|                 | 12H  | 13.52            | 13.90 | 14.57 | 14.95 | 16.32 | 9.26           | 9.65  | 10.31 | 10.69 | 12.06 |
| 8H              | 4H   | 12.70            | 13.12 | 13.73 | 14.16 | 15.52 | 8.93           | 9.35  | 9.96  | 10.39 | 11.75 |
|                 | 6H   | 13.27            | 13.62 | 14.32 | 14.69 | 16.06 | 9.45           | 9.80  | 10.50 | 10.87 | 12.24 |
|                 | 8H   | 13.49            | 13.79 | 14.55 | 14.85 | 16.24 | 9.64           | 9.95  | 10.70 | 11.01 | 12.39 |
|                 | 12H  | 13.63            | 13.90 | 14.69 | 14.95 | 16.38 | 9.76           | 10.03 | 10.83 | 11.09 | 12.51 |
| 12H             | 4H   | 12.65            | 13.03 | 13.70 | 14.08 | 15.45 | 8.94           | 9.32  | 9.98  | 10.36 | 11.74 |
|                 | 6H   | 13.24            | 13.55 | 14.31 | 14.61 | 15.99 | 9.50           | 9.81  | 10.56 | 10.87 | 12.25 |
|                 | 8H   | 13.47            | 13.74 | 14.53 | 14.79 | 16.22 | 9.71           | 9.98  | 10.78 | 11.04 | 12.46 |