

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: P911452

Luminaire Tested: DFN2DIP-PN4F0-070D080US850-FLLFLL

Issue Date: 11/21/2024

**Test Information**

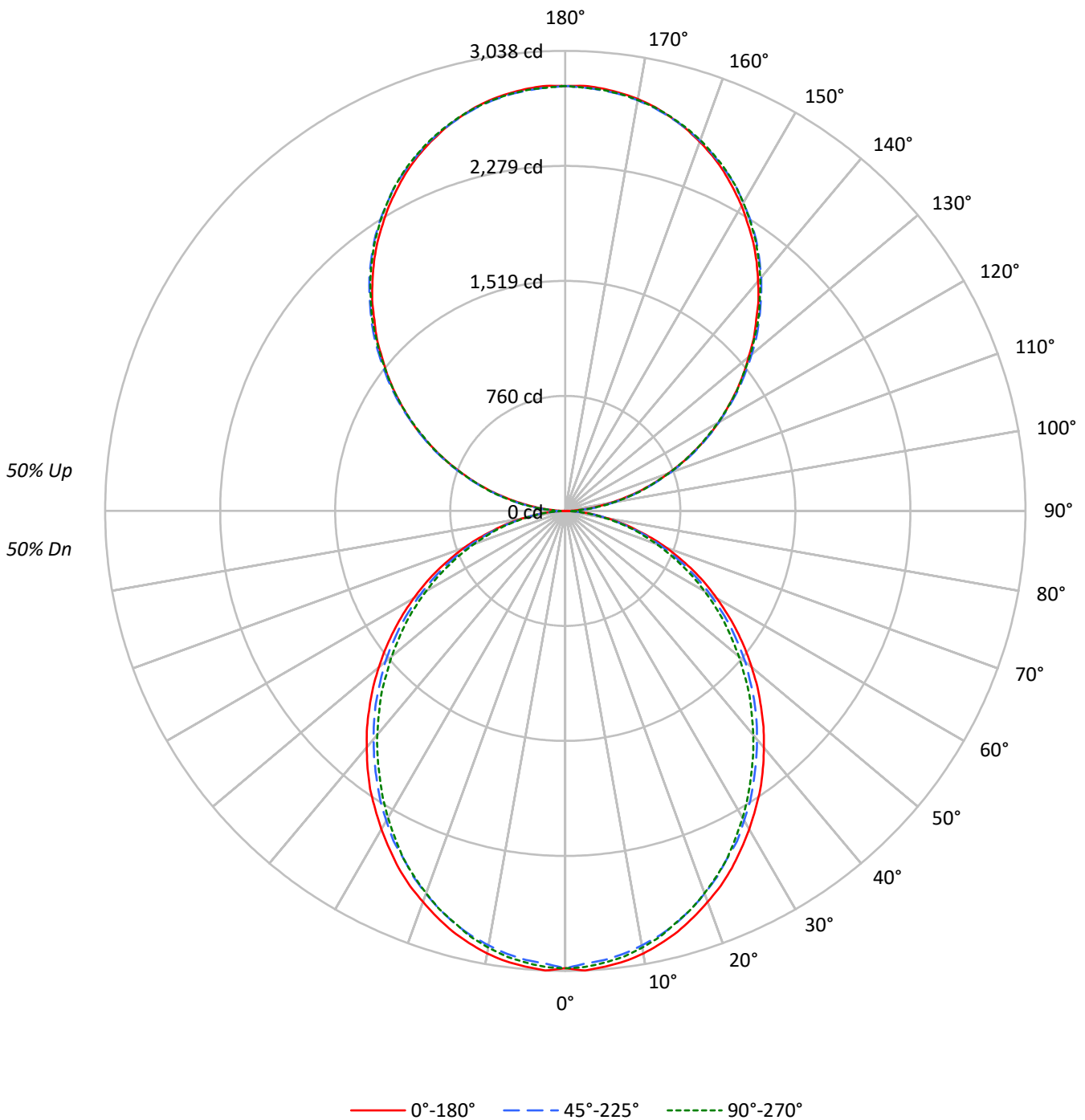
Test Method: LM-79-2019  
Report Number: P911452  
REPORT IS A COMBINATION OF REPORTS P899687 AND P896497  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-PN4F0-070D080US850-FLLFLL  
Description: 4 foot, Pentagon Define Geo, with Direct Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 15537.1 lumens  
Efficiency: N/A  
Efficacy: 124.7 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29  
Luminous Opening: Rectangular w/ Sides (W: 3.74' x L: 3.94' x H: 0.1')  
CIE Type: General Diffuse  
  
Input Watts (W): 124.6  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9789  
Total Harmonic Distortion (THDi): 0.074  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT

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CATALOG NUMBER: DFN2DIP-PN4F0-070D080US850-FLLFL

### Luminous Intensity Polar Plot





TEST NUMBER: P911452  
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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   | 107 | 107 | 107 | 107 | 99 | 99 | 99 | 99 | 83 | 83 | 83 | 69 | 69 | 69 | 56 | 56 | 56 | 56 | 56 | 56 | 50 |
| 1   | 98  | 93  | 89  | 86  | 90 | 86 | 83 | 80 | 73 | 70 | 68 | 61 | 59 | 57 | 49 | 48 | 47 | 49 | 48 | 47 | 42 |
| 2   | 89  | 82  | 75  | 70  | 82 | 75 | 70 | 66 | 64 | 60 | 56 | 53 | 50 | 48 | 43 | 41 | 40 | 43 | 41 | 40 | 35 |
| 3   | 81  | 72  | 64  | 58  | 74 | 66 | 60 | 55 | 56 | 51 | 47 | 47 | 43 | 40 | 38 | 36 | 34 | 38 | 36 | 34 | 30 |
| 4   | 74  | 63  | 56  | 49  | 68 | 59 | 52 | 46 | 50 | 45 | 40 | 42 | 38 | 35 | 34 | 31 | 29 | 34 | 31 | 29 | 25 |
| 5   | 68  | 57  | 48  | 42  | 63 | 52 | 45 | 40 | 45 | 39 | 35 | 38 | 33 | 30 | 31 | 28 | 25 | 31 | 28 | 25 | 22 |
| 6   | 63  | 51  | 43  | 37  | 58 | 47 | 40 | 35 | 40 | 35 | 30 | 34 | 30 | 26 | 28 | 25 | 22 | 28 | 25 | 22 | 19 |
| 7   | 58  | 46  | 38  | 32  | 53 | 43 | 35 | 30 | 37 | 31 | 27 | 31 | 27 | 23 | 26 | 22 | 20 | 26 | 22 | 20 | 17 |
| 8   | 54  | 42  | 34  | 28  | 50 | 39 | 32 | 27 | 33 | 28 | 24 | 28 | 24 | 21 | 24 | 20 | 18 | 24 | 20 | 18 | 15 |
| 9   | 50  | 38  | 30  | 25  | 46 | 35 | 29 | 24 | 31 | 25 | 21 | 26 | 22 | 19 | 22 | 18 | 16 | 22 | 18 | 16 | 14 |
| 10  | 47  | 35  | 28  | 23  | 43 | 33 | 26 | 22 | 28 | 23 | 19 | 24 | 20 | 17 | 20 | 17 | 15 | 20 | 17 | 15 | 13 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 2205 | 2205 | 2205 |
| 5°  | 2208 | 2175 | 2189 |
| 10° | 2191 | 2145 | 2160 |
| 15° | 2158 | 2110 | 2114 |
| 20° | 2115 | 2062 | 2067 |
| 25° | 2072 | 2003 | 2013 |
| 30° | 2017 | 1949 | 1943 |
| 35° | 1966 | 1885 | 1870 |
| 40° | 1902 | 1820 | 1800 |
| 45° | 1839 | 1755 | 1729 |
| 50° | 1770 | 1687 | 1646 |
| 55° | 1698 | 1608 | 1570 |
| 60° | 1616 | 1515 | 1484 |
| 65° | 1528 | 1418 | 1381 |
| 70° | 1414 | 1300 | 1271 |
| 75° | 1257 | 1159 | 1170 |
| 80° | 1068 | 980  | 975  |
| 85° | 772  | 669  | 653  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 90°  
 Vertical Angle: 90°  
 Luminance: 2198 cd/sqm



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**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 284.3   | 1.8       |
| 10°-20°   | 799.9   | 5.1       |
| 20°-30°   | 1175.6  | 7.6       |
| 30°-40°   | 1365.3  | 8.8       |
| 40°-50°   | 1363.6  | 8.8       |
| 50°-60°   | 1189.1  | 7.7       |
| 60°-70°   | 879.0   | 5.7       |
| 70°-80°   | 497.3   | 3.2       |
| 80°-90°   | 139.3   | 0.9       |
| 90°-100°  | 173.6   | 1.1       |
| 100°-110° | 551.7   | 3.6       |
| 110°-120° | 944.1   | 6.1       |
| 120°-130° | 1241.6  | 8.0       |
| 130°-140° | 1393.7  | 9.0       |
| 140°-150° | 1366.6  | 8.8       |
| 150°-160° | 1146.4  | 7.4       |
| 160°-170° | 760.3   | 4.9       |
| 170°-180° | 265.7   | 1.7       |
| 0°-30°    | 2259.8  | 14.5      |
| 0°-40°    | 3625.1  | 23.3      |
| 0°-60°    | 6177.8  | 39.8      |
| 0°-90°    | 7693.4  | 49.5      |
| 90°-120°  | 1669.4  | 10.7      |
| 90°-150°  | 5671.3  | 36.5      |
| 90°-180°  | 7844.0  | 50.5      |
| 0°-180°   | 15537.1 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 3021 | 3021  | 3021 | 3021  | 3021 |      |
| 5°   | 3021 | 3009  | 2977 | 3000  | 2995 | 287  |
| 15°  | 2876 | 2858  | 2820 | 2832  | 2818 | 810  |
| 25°  | 2602 | 2579  | 2530 | 2536  | 2530 | 1198 |
| 35°  | 2245 | 2216  | 2170 | 2152  | 2138 | 1402 |
| 45°  | 1827 | 1807  | 1763 | 1731  | 1720 | 1410 |
| 55°  | 1383 | 1365  | 1330 | 1296  | 1281 | 1236 |
| 65°  | 933  | 915   | 886  | 860   | 845  | 922  |
| 75°  | 488  | 482   | 467  | 450   | 456  | 521  |
| 85°  | 119  | 116   | 114  | 104   | 102  | 133  |
| 90°  | 3    | 30    | 83   | 78    | 80   | 15   |
| 95°  | 124  | 147   | 151  | 151   | 147  | 137  |
| 105° | 509  | 516   | 521  | 525   | 525  | 537  |
| 115° | 947  | 961   | 957  | 954   | 947  | 937  |
| 125° | 1378 | 1399  | 1392 | 1385  | 1382 | 1231 |
| 135° | 1782 | 1809  | 1814 | 1811  | 1804 | 1378 |
| 145° | 2164 | 2181  | 2194 | 2197  | 2188 | 1352 |
| 155° | 2474 | 2481  | 2489 | 2500  | 2493 | 1139 |
| 165° | 2692 | 2689  | 2689 | 2706  | 2694 | 759  |
| 175° | 2801 | 2794  | 2789 | 2806  | 2792 | 266  |
| 180° | 2806 | 2806  | 2806 | 2806  | 2806 |      |



TEST NUMBER: P911452

CATALOG NUMBER: DFN2DIP-PN4F0-070D080US850-FLLFL

**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 3020.6 | 3020.6 | 3020.6 | 3020.6 | 3020.6 |
| 2.5°   | 3038.2 | 3023.7 | 2991.6 | 3020.6 | 3015.0 |
| 5°     | 3020.6 | 3009.3 | 2977.2 | 3000.3 | 2994.7 |
| 7.5°   | 3000.3 | 2983.0 | 2950.9 | 2974.4 | 2968.6 |
| 10°    | 2968.6 | 2948.2 | 2913.3 | 2936.5 | 2927.9 |
| 12.5°  | 2924.8 | 2907.6 | 2872.8 | 2887.2 | 2881.3 |
| 15°    | 2875.5 | 2858.2 | 2820.3 | 2832.1 | 2817.5 |
| 17.5°  | 2814.4 | 2797.2 | 2759.3 | 2773.8 | 2759.3 |
| 20°    | 2747.5 | 2730.4 | 2689.7 | 2698.3 | 2686.9 |
| 22.5°  | 2681.0 | 2654.8 | 2616.9 | 2616.9 | 2611.0 |
| 25°    | 2602.5 | 2579.3 | 2530.1 | 2535.6 | 2530.1 |
| 27.5°  | 2515.2 | 2494.9 | 2457.3 | 2448.7 | 2434.1 |
| 30°    | 2428.4 | 2404.9 | 2361.5 | 2352.9 | 2341.1 |
| 32.5°  | 2335.2 | 2318.0 | 2271.5 | 2253.9 | 2242.2 |
| 35°    | 2245.3 | 2216.3 | 2169.8 | 2152.2 | 2137.7 |
| 37.5°  | 2143.6 | 2117.4 | 2070.8 | 2050.5 | 2036.0 |
| 40°    | 2039.1 | 2015.7 | 1969.1 | 1943.3 | 1931.5 |
| 42.5°  | 1937.4 | 1914.0 | 1867.8 | 1838.5 | 1821.2 |
| 45°    | 1827.1 | 1806.8 | 1763.0 | 1731.3 | 1719.5 |
| 47.5°  | 1719.5 | 1699.2 | 1652.6 | 1620.6 | 1603.4 |
| 50°    | 1606.2 | 1591.6 | 1550.9 | 1510.3 | 1495.8 |
| 52.5°  | 1495.8 | 1475.5 | 1437.9 | 1405.9 | 1385.5 |
| 55°    | 1382.7 | 1365.2 | 1330.4 | 1295.5 | 1281.0 |
| 57.5°  | 1269.4 | 1254.8 | 1216.9 | 1182.1 | 1170.4 |
| 60°    | 1155.9 | 1144.5 | 1103.9 | 1071.8 | 1063.2 |
| 62.5°  | 1045.6 | 1025.3 | 996.3  | 967.4  | 955.6  |
| 65°    | 932.6  | 914.9  | 886.0  | 859.8  | 845.3  |
| 67.5°  | 816.3  | 801.6  | 775.6  | 755.3  | 743.6  |
| 70°    | 708.8  | 697.1  | 670.8  | 650.5  | 639.1  |
| 72.5°  | 598.4  | 586.8  | 572.2  | 551.9  | 543.3  |
| 75°    | 487.8  | 482.3  | 467.4  | 450.3  | 456.1  |
| 77.5°  | 389.3  | 377.5  | 371.6  | 363.0  | 354.4  |
| 80°    | 290.6  | 287.6  | 281.7  | 273.0  | 267.2  |
| 82.5°  | 197.5  | 197.5  | 194.7  | 183.1  | 183.1  |
| 85°    | 119.0  | 116.2  | 113.5  | 104.5  | 101.7  |
| 87.5°  | 52.3   | 46.6   | 40.7   | 32.1   | 28.9   |
| 90°    | 2.6    | 30.5   | 83.0   | 77.9   | 80.4   |
| 92.5°  | 52.5   | 71.1   | 73.6   | 76.1   | 76.1   |
| 95°    | 123.5  | 147.2  | 151.4  | 151.4  | 147.2  |
| 97.5°  | 205.6  | 227.6  | 236.9  | 236.9  | 236.9  |
| 100°   | 300.3  | 319.7  | 326.5  | 326.5  | 323.9  |
| 102.5° | 400.1  | 414.5  | 423.7  | 426.3  | 423.7  |
| 105°   | 509.3  | 516.0  | 521.1  | 525.3  | 525.3  |
| 107.5° | 617.5  | 627.7  | 627.7  | 629.4  | 617.5  |
| 110°   | 722.4  | 735.9  | 735.9  | 735.9  | 729.2  |



TEST NUMBER: P911452

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**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 835.7  | 850.2  | 847.6  | 840.8  | 835.7  |
| 115°   | 947.4  | 960.9  | 956.7  | 954.2  | 947.4  |
| 117.5° | 1058.2 | 1076.8 | 1065.0 | 1058.2 | 1051.4 |
| 120°   | 1169.9 | 1188.5 | 1169.9 | 1169.9 | 1162.2 |
| 122.5° | 1271.4 | 1295.1 | 1283.2 | 1276.5 | 1271.4 |
| 125°   | 1377.9 | 1399.1 | 1392.3 | 1384.7 | 1382.3 |
| 127.5° | 1482.1 | 1508.2 | 1498.9 | 1488.8 | 1482.1 |
| 130°   | 1579.3 | 1609.7 | 1605.5 | 1600.5 | 1591.2 |
| 132.5° | 1688.5 | 1712.1 | 1713.8 | 1702.0 | 1695.2 |
| 135°   | 1782.3 | 1808.6 | 1813.7 | 1811.1 | 1804.3 |
| 137.5° | 1887.2 | 1908.4 | 1912.6 | 1910.9 | 1900.7 |
| 140°   | 1979.5 | 2000.5 | 2012.4 | 2012.4 | 2003.1 |
| 142.5° | 2074.2 | 2095.3 | 2102.1 | 2104.7 | 2095.3 |
| 145°   | 2163.9 | 2180.7 | 2194.3 | 2196.8 | 2187.5 |
| 147.5° | 2244.2 | 2265.4 | 2275.4 | 2279.8 | 2270.5 |
| 150°   | 2327.1 | 2341.4 | 2350.7 | 2358.4 | 2350.7 |
| 152.5° | 2400.7 | 2415.1 | 2426.9 | 2436.3 | 2426.9 |
| 155°   | 2474.3 | 2481.1 | 2488.7 | 2500.5 | 2492.9 |
| 157.5° | 2537.7 | 2542.8 | 2547.0 | 2563.9 | 2552.1 |
| 160°   | 2594.4 | 2599.5 | 2602.0 | 2616.4 | 2606.3 |
| 162.5° | 2646.9 | 2646.9 | 2649.4 | 2665.5 | 2653.6 |
| 165°   | 2691.7 | 2689.1 | 2689.1 | 2706.1 | 2694.2 |
| 167.5° | 2732.2 | 2724.7 | 2724.7 | 2741.6 | 2729.7 |
| 170°   | 2762.7 | 2756.0 | 2753.4 | 2770.4 | 2756.0 |
| 172.5° | 2783.9 | 2777.2 | 2774.6 | 2791.5 | 2777.2 |
| 175°   | 2800.8 | 2794.0 | 2788.9 | 2805.9 | 2791.5 |
| 177.5° | 2810.1 | 2803.3 | 2798.2 | 2812.6 | 2798.2 |
| 180°   | 2805.9 | 2805.9 | 2805.9 | 2805.9 | 2805.9 |



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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 | 9.98             | 10.84 | 10.94 | 11.81 | 13.09 | 9.54           | 10.40 | 10.50 | 11.37 | 12.65 |
|                 | 3H   | 11.64            | 12.41 | 12.61 | 13.40 | 14.70 | 11.16          | 11.93 | 12.13 | 12.91 | 14.21 |
|                 | 4H   | 12.23            | 12.96 | 13.22 | 13.95 | 15.26 | 11.74          | 12.47 | 12.73 | 13.46 | 14.77 |
|                 | 6H   | 12.63            | 13.30 | 13.63 | 14.30 | 15.62 | 12.14          | 12.81 | 13.14 | 13.81 | 15.13 |
|                 | 8H   | 12.74            | 13.38 | 13.74 | 14.39 | 15.71 | 12.25          | 12.89 | 13.25 | 13.90 | 15.21 |
|                 | 12H  | 12.79            | 13.40 | 13.80 | 14.40 | 15.74 | 12.29          | 12.90 | 13.30 | 13.90 | 15.24 |
| 4H              | 2H   | 10.44            | 11.17 | 11.43 | 12.16 | 13.47 | 10.09          | 10.82 | 11.08 | 11.81 | 13.11 |
|                 | 3H   | 12.31            | 12.92 | 13.31 | 13.93 | 15.26 | 11.91          | 12.51 | 12.91 | 13.53 | 14.85 |
|                 | 4H   | 13.03            | 13.58 | 14.04 | 14.59 | 15.94 | 12.61          | 13.16 | 13.62 | 14.17 | 15.52 |
|                 | 6H   | 13.54            | 14.02 | 14.56 | 15.06 | 16.40 | 13.12          | 13.60 | 14.14 | 14.63 | 15.97 |
|                 | 8H   | 13.69            | 14.14 | 14.72 | 15.17 | 16.53 | 13.27          | 13.71 | 14.29 | 14.74 | 16.10 |
|                 | 12H  | 13.77            | 14.17 | 14.81 | 15.22 | 16.58 | 13.33          | 13.73 | 14.37 | 14.78 | 16.14 |
| 8H              | 4H   | 13.22            | 13.67 | 14.24 | 14.70 | 16.05 | 12.85          | 13.30 | 13.87 | 14.33 | 15.68 |
|                 | 6H   | 13.86            | 14.23 | 14.90 | 15.30 | 16.65 | 13.48          | 13.85 | 14.53 | 14.92 | 16.27 |
|                 | 8H   | 14.08            | 14.40 | 15.13 | 15.46 | 16.83 | 13.69          | 14.02 | 14.75 | 15.07 | 16.45 |
|                 | 12H  | 14.21            | 14.50 | 15.27 | 15.55 | 16.97 | 13.81          | 14.10 | 14.87 | 15.15 | 16.56 |
| 12H             | 4H   | 13.21            | 13.61 | 14.25 | 14.65 | 16.02 | 12.85          | 13.25 | 13.89 | 14.29 | 15.65 |
|                 | 6H   | 13.89            | 14.21 | 14.94 | 15.27 | 16.64 | 13.52          | 13.85 | 14.58 | 14.90 | 16.28 |
|                 | 8H   | 14.13            | 14.42 | 15.19 | 15.47 | 16.88 | 13.76          | 14.04 | 14.82 | 15.09 | 16.51 |