

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: P917748

Luminaire Tested: DFN2DIP-SQ4F0-100D140US930-FLLFLL

Issue Date: 11/21/2024

**Test Information**

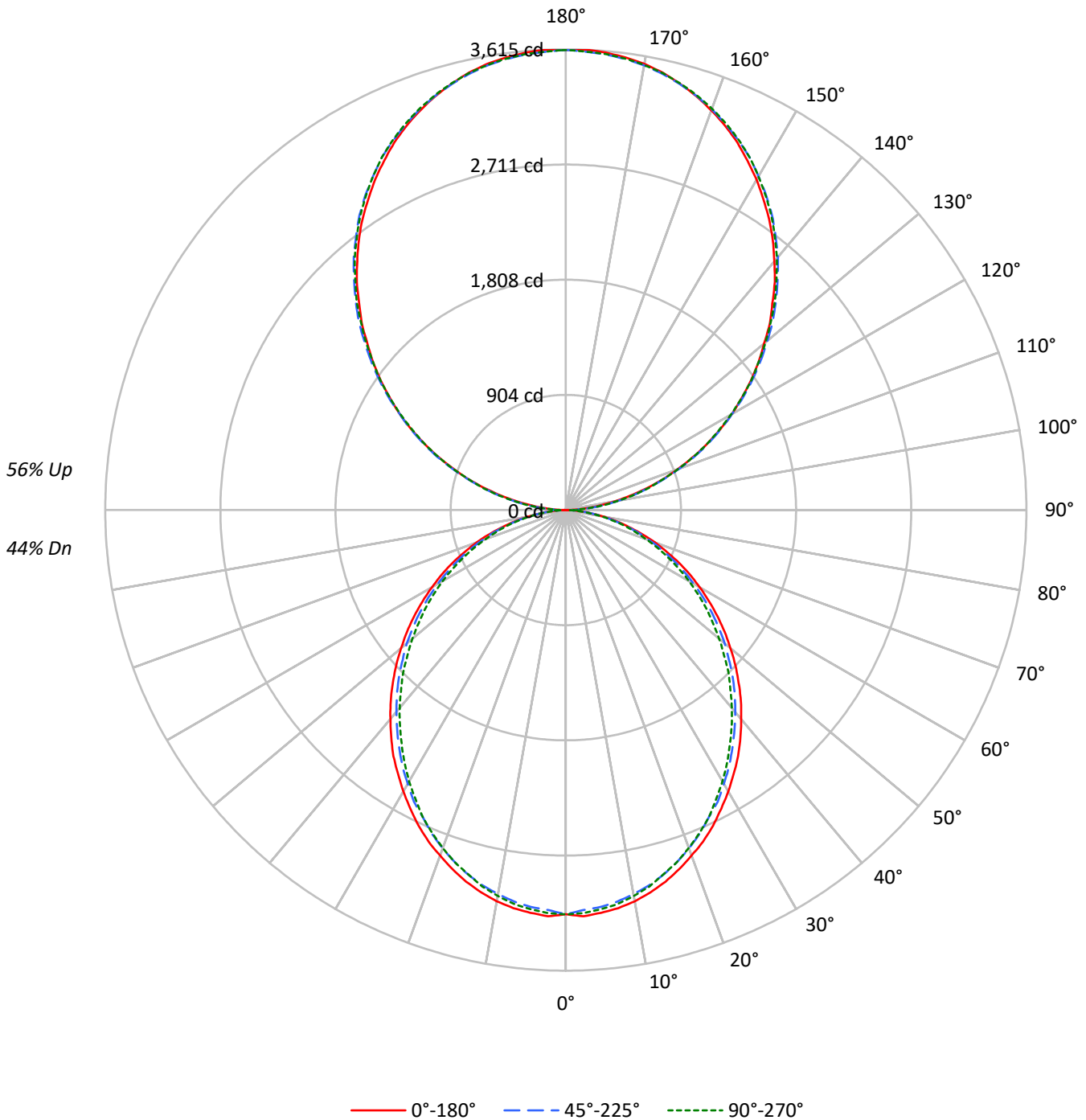
Test Method: LM-79-2019  
Report Number: P917748  
REPORT IS A COMBINATION OF REPORTS P900193 AND P896915  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-SQ4F0-100D140US930-FLLFLL  
Description: 4 foot, Square Define Geo, with Direct Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 18173.0 lumens  
Efficiency: N/A  
Efficacy: 91.6 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29  
Luminous Opening: Rectangular w/ Sides (W: 3.92' x L: 3.92' x H: 0.1')  
CIE Type: General Diffuse  
  
Input Watts (W): 198.5  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9968  
Total Harmonic Distortion (THDi): 0.064  
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: P917748  
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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   | 106 | 106 | 106 | 106 | 97 | 97 | 97 | 97 | 80 | 80 | 80 | 65 | 65 | 65 | 51 | 51 | 51 | 44 |    |    | 44 |
| 1   | 97  | 92  | 88  | 85  | 88 | 85 | 81 | 78 | 70 | 68 | 66 | 57 | 56 | 54 | 45 | 44 | 43 | 37 |    |    | 37 |
| 2   | 88  | 81  | 74  | 69  | 80 | 74 | 69 | 64 | 62 | 58 | 55 | 50 | 48 | 45 | 40 | 38 | 36 | 31 |    |    | 31 |
| 3   | 80  | 71  | 64  | 58  | 73 | 65 | 59 | 54 | 54 | 50 | 46 | 44 | 41 | 38 | 35 | 33 | 31 | 27 |    |    | 27 |
| 4   | 73  | 63  | 55  | 49  | 67 | 58 | 51 | 45 | 48 | 43 | 39 | 40 | 36 | 33 | 31 | 29 | 27 | 23 |    |    | 23 |
| 5   | 67  | 56  | 48  | 42  | 61 | 51 | 44 | 39 | 43 | 38 | 34 | 35 | 31 | 28 | 28 | 25 | 23 | 20 |    |    | 20 |
| 6   | 62  | 50  | 42  | 36  | 57 | 46 | 39 | 34 | 39 | 33 | 29 | 32 | 28 | 25 | 26 | 23 | 20 | 17 |    |    | 17 |
| 7   | 57  | 45  | 37  | 32  | 52 | 42 | 35 | 30 | 35 | 30 | 26 | 29 | 25 | 22 | 23 | 20 | 18 | 15 |    |    | 15 |
| 8   | 53  | 41  | 33  | 28  | 49 | 38 | 31 | 26 | 32 | 27 | 23 | 27 | 23 | 20 | 22 | 19 | 16 | 14 |    |    | 14 |
| 9   | 49  | 37  | 30  | 25  | 45 | 35 | 28 | 23 | 29 | 24 | 20 | 24 | 20 | 18 | 20 | 17 | 15 | 12 |    |    | 12 |
| 10  | 46  | 34  | 27  | 22  | 42 | 32 | 25 | 21 | 27 | 22 | 18 | 23 | 19 | 16 | 18 | 15 | 13 | 11 |    |    | 11 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 2226 | 2226 | 2226 |
| 5°  | 2230 | 2195 | 2210 |
| 10° | 2211 | 2166 | 2181 |
| 15° | 2179 | 2131 | 2135 |
| 20° | 2135 | 2082 | 2088 |
| 25° | 2091 | 2023 | 2033 |
| 30° | 2036 | 1968 | 1963 |
| 35° | 1984 | 1904 | 1889 |
| 40° | 1920 | 1839 | 1819 |
| 45° | 1857 | 1773 | 1748 |
| 50° | 1787 | 1705 | 1664 |
| 55° | 1714 | 1625 | 1588 |
| 60° | 1632 | 1531 | 1501 |
| 65° | 1542 | 1434 | 1398 |
| 70° | 1427 | 1315 | 1287 |
| 75° | 1268 | 1173 | 1186 |
| 80° | 1077 | 992  | 990  |
| 85° | 778  | 679  | 666  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 90°  
 Vertical Angle: 90°  
 Luminance: 2842 cd/sqm



TEST NUMBER: P917748

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**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 298.6   | 1.6       |
| 10°-20°   | 840.1   | 4.6       |
| 20°-30°   | 1234.6  | 6.8       |
| 30°-40°   | 1433.9  | 7.9       |
| 40°-50°   | 1432.1  | 7.9       |
| 50°-60°   | 1248.8  | 6.9       |
| 60°-70°   | 923.1   | 5.1       |
| 70°-80°   | 522.3   | 2.9       |
| 80°-90°   | 148.1   | 0.8       |
| 90°-100°  | 223.4   | 1.2       |
| 100°-110° | 709.8   | 3.9       |
| 110°-120° | 1214.6  | 6.7       |
| 120°-130° | 1597.4  | 8.8       |
| 130°-140° | 1793.0  | 9.9       |
| 140°-150° | 1758.2  | 9.7       |
| 150°-160° | 1474.9  | 8.1       |
| 160°-170° | 978.1   | 5.4       |
| 170°-180° | 341.9   | 1.9       |
| 0°-30°    | 2373.3  | 13.1      |
| 0°-40°    | 3807.2  | 20.9      |
| 0°-60°    | 6488.2  | 35.7      |
| 0°-90°    | 8081.7  | 44.5      |
| 90°-120°  | 2147.7  | 11.8      |
| 90°-150°  | 7296.4  | 40.1      |
| 90°-180°  | 10091.0 | 55.5      |
| 0°-180°   | 18173.0 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 3172 | 3172  | 3172 | 3172  | 3172 |      |
| 5°   | 3172 | 3160  | 3127 | 3151  | 3145 | 301  |
| 15°  | 3020 | 3002  | 2962 | 2974  | 2959 | 851  |
| 25°  | 2733 | 2709  | 2657 | 2663  | 2657 | 1258 |
| 35°  | 2358 | 2328  | 2279 | 2260  | 2245 | 1473 |
| 45°  | 1919 | 1898  | 1852 | 1818  | 1806 | 1481 |
| 55°  | 1452 | 1434  | 1397 | 1361  | 1345 | 1298 |
| 65°  | 979  | 961   | 930  | 903   | 888  | 968  |
| 75°  | 512  | 506   | 491  | 473   | 479  | 547  |
| 85°  | 125  | 122   | 119  | 110   | 107  | 139  |
| 90°  | 3    | 39    | 107  | 100   | 103  | 18   |
| 95°  | 159  | 189   | 195  | 195   | 189  | 177  |
| 105° | 655  | 664   | 670  | 676   | 676  | 691  |
| 115° | 1219 | 1236  | 1231 | 1228  | 1219 | 1206 |
| 125° | 1773 | 1800  | 1791 | 1782  | 1778 | 1584 |
| 135° | 2293 | 2327  | 2333 | 2330  | 2321 | 1772 |
| 145° | 2784 | 2806  | 2823 | 2826  | 2814 | 1739 |
| 155° | 3183 | 3192  | 3202 | 3217  | 3207 | 1465 |
| 165° | 3463 | 3460  | 3460 | 3482  | 3466 | 977  |
| 175° | 3603 | 3595  | 3588 | 3610  | 3591 | 342  |
| 180° | 3610 | 3610  | 3610 | 3610  | 3610 |      |



TEST NUMBER: P917748

CATALOG NUMBER: DFN2DIP-SQ4F0-100D140US930-FLLFLL

**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 3172.4 | 3172.4 | 3172.4 | 3172.4 | 3172.4 |
| 2.5°   | 3190.8 | 3175.6 | 3141.9 | 3172.4 | 3166.5 |
| 5°     | 3172.4 | 3160.4 | 3126.8 | 3151.0 | 3145.2 |
| 7.5°   | 3151.0 | 3132.9 | 3099.2 | 3123.8 | 3117.7 |
| 10°    | 3117.7 | 3096.3 | 3059.7 | 3084.0 | 3075.0 |
| 12.5°  | 3071.7 | 3053.6 | 3017.0 | 3032.3 | 3026.1 |
| 15°    | 3019.9 | 3001.8 | 2962.0 | 2974.3 | 2959.1 |
| 17.5°  | 2955.9 | 2937.8 | 2897.9 | 2913.1 | 2897.9 |
| 20°    | 2885.6 | 2867.5 | 2824.8 | 2833.8 | 2821.8 |
| 22.5°  | 2815.7 | 2788.2 | 2748.4 | 2748.4 | 2742.3 |
| 25°    | 2733.2 | 2708.9 | 2657.1 | 2662.9 | 2657.1 |
| 27.5°  | 2641.6 | 2620.2 | 2580.7 | 2571.7 | 2556.4 |
| 30°    | 2550.3 | 2525.7 | 2480.1 | 2471.0 | 2458.7 |
| 32.5°  | 2452.6 | 2434.5 | 2385.6 | 2367.1 | 2354.8 |
| 35°    | 2358.1 | 2327.7 | 2278.8 | 2260.3 | 2245.1 |
| 37.5°  | 2251.3 | 2223.7 | 2174.9 | 2153.5 | 2138.3 |
| 40°    | 2141.5 | 2116.9 | 2068.1 | 2040.9 | 2028.6 |
| 42.5°  | 2034.7 | 2010.1 | 1961.6 | 1930.9 | 1912.8 |
| 45°    | 1918.9 | 1897.5 | 1851.5 | 1818.2 | 1806.0 |
| 47.5°  | 1806.0 | 1784.6 | 1735.7 | 1702.0 | 1683.9 |
| 50°    | 1686.9 | 1671.6 | 1628.9 | 1586.2 | 1571.0 |
| 52.5°  | 1571.0 | 1549.6 | 1510.1 | 1476.5 | 1455.1 |
| 55°    | 1452.2 | 1433.8 | 1397.2 | 1360.6 | 1345.4 |
| 57.5°  | 1333.1 | 1317.8 | 1278.1 | 1241.5 | 1229.2 |
| 60°    | 1214.0 | 1202.0 | 1159.3 | 1125.6 | 1116.6 |
| 62.5°  | 1098.1 | 1076.8 | 1046.4 | 1015.9 | 1003.6 |
| 65°    | 979.3  | 960.9  | 930.5  | 902.9  | 887.8  |
| 67.5°  | 857.4  | 841.8  | 814.6  | 793.3  | 781.0  |
| 70°    | 744.4  | 732.1  | 704.6  | 683.2  | 671.2  |
| 72.5°  | 628.5  | 616.2  | 601.0  | 579.7  | 570.5  |
| 75°    | 512.3  | 506.5  | 491.0  | 472.9  | 479.0  |
| 77.5°  | 408.8  | 396.5  | 390.3  | 381.2  | 372.2  |
| 80°    | 305.2  | 302.0  | 295.8  | 286.7  | 280.6  |
| 82.5°  | 207.5  | 207.5  | 204.6  | 192.2  | 192.2  |
| 85°    | 124.9  | 122.1  | 119.1  | 109.7  | 106.8  |
| 87.5°  | 55.0   | 48.8   | 42.7   | 33.7   | 30.4   |
| 90°    | 3.3    | 39.2   | 106.6  | 100.1  | 103.4  |
| 92.5°  | 67.5   | 91.4   | 94.7   | 97.9   | 97.9   |
| 95°    | 158.9  | 189.4  | 194.8  | 194.8  | 189.4  |
| 97.5°  | 264.5  | 292.8  | 304.8  | 304.8  | 304.8  |
| 100°   | 386.4  | 411.4  | 420.0  | 420.0  | 416.8  |
| 102.5° | 514.8  | 533.3  | 545.3  | 548.5  | 545.3  |
| 105°   | 655.2  | 663.9  | 670.4  | 675.8  | 675.8  |
| 107.5° | 794.4  | 807.6  | 807.6  | 809.7  | 794.4  |
| 110°   | 929.4  | 946.8  | 946.8  | 946.8  | 938.1  |



TEST NUMBER: P917748

CATALOG NUMBER: DFN2DIP-SQ4F0-100D140US930-FLLFLL

**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 1075.2 | 1093.7 | 1090.5 | 1081.7 | 1075.2 |
| 115°   | 1218.9 | 1236.3 | 1230.9 | 1227.6 | 1218.9 |
| 117.5° | 1361.5 | 1385.4 | 1370.2 | 1361.5 | 1352.7 |
| 120°   | 1505.1 | 1529.1 | 1505.1 | 1505.1 | 1495.3 |
| 122.5° | 1635.7 | 1666.1 | 1651.0 | 1642.3 | 1635.7 |
| 125°   | 1772.9 | 1800.0 | 1791.3 | 1781.5 | 1778.2 |
| 127.5° | 1906.7 | 1940.4 | 1928.4 | 1915.4 | 1906.7 |
| 130°   | 2031.8 | 2071.0 | 2065.6 | 2059.0 | 2047.1 |
| 132.5° | 2172.2 | 2202.7 | 2204.9 | 2189.6 | 2180.9 |
| 135°   | 2293.0 | 2326.8 | 2333.3 | 2330.0 | 2321.3 |
| 137.5° | 2428.0 | 2455.2 | 2460.7 | 2458.5 | 2445.4 |
| 140°   | 2546.6 | 2573.8 | 2589.1 | 2589.1 | 2577.1 |
| 142.5° | 2668.5 | 2695.7 | 2704.4 | 2707.7 | 2695.7 |
| 145°   | 2783.8 | 2805.6 | 2823.1 | 2826.3 | 2814.3 |
| 147.5° | 2887.2 | 2914.4 | 2927.5 | 2933.0 | 2921.0 |
| 150°   | 2993.9 | 3012.4 | 3024.3 | 3034.1 | 3024.3 |
| 152.5° | 3088.6 | 3107.1 | 3122.3 | 3134.3 | 3122.3 |
| 155°   | 3183.3 | 3192.0 | 3201.8 | 3217.0 | 3207.2 |
| 157.5° | 3264.9 | 3271.4 | 3276.8 | 3298.6 | 3283.4 |
| 160°   | 3337.8 | 3344.4 | 3347.6 | 3366.1 | 3353.0 |
| 162.5° | 3405.3 | 3405.3 | 3408.5 | 3429.2 | 3414.0 |
| 165°   | 3463.0 | 3459.7 | 3459.7 | 3481.5 | 3466.2 |
| 167.5° | 3515.2 | 3505.4 | 3505.4 | 3527.1 | 3511.9 |
| 170°   | 3554.4 | 3545.7 | 3542.4 | 3564.2 | 3545.7 |
| 172.5° | 3581.6 | 3572.9 | 3569.6 | 3591.4 | 3572.9 |
| 175°   | 3603.4 | 3594.6 | 3588.1 | 3609.9 | 3591.4 |
| 177.5° | 3615.3 | 3606.6 | 3600.1 | 3618.5 | 3600.1 |
| 180°   | 3609.9 | 3609.9 | 3609.9 | 3609.9 | 3609.9 |



TEST NUMBER: P917748  
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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 | 9.53             | 10.34 | 10.53 | 11.36 | 12.70 | 9.08           | 9.90  | 10.09 | 10.91 | 12.26 |
|                 | 3H   | 11.19            | 11.92 | 12.20 | 12.94 | 14.31 | 10.70          | 11.43 | 11.71 | 12.45 | 13.82 |
|                 | 4H   | 11.78            | 12.47 | 12.80 | 13.50 | 14.87 | 11.28          | 11.98 | 12.31 | 13.00 | 14.38 |
|                 | 6H   | 12.18            | 12.82 | 13.22 | 13.85 | 15.23 | 11.68          | 12.32 | 12.72 | 13.35 | 14.73 |
|                 | 8H   | 12.28            | 12.89 | 13.33 | 13.94 | 15.32 | 11.78          | 12.39 | 12.82 | 13.44 | 14.82 |
|                 | 12H  | 12.33            | 12.91 | 13.38 | 13.95 | 15.36 | 11.82          | 12.40 | 12.87 | 13.44 | 14.85 |
| 4H              | 2H   | 9.98             | 10.68 | 11.02 | 11.70 | 13.08 | 9.63           | 10.32 | 10.66 | 11.35 | 12.72 |
|                 | 3H   | 11.85            | 12.43 | 12.89 | 13.48 | 14.87 | 11.44          | 12.02 | 12.48 | 13.07 | 14.46 |
|                 | 4H   | 12.57            | 13.10 | 13.61 | 14.14 | 15.55 | 12.14          | 12.67 | 13.19 | 13.72 | 15.13 |
|                 | 6H   | 13.08            | 13.54 | 14.14 | 14.61 | 16.01 | 12.65          | 13.11 | 13.71 | 14.17 | 15.58 |
|                 | 8H   | 13.23            | 13.66 | 14.29 | 14.72 | 16.14 | 12.80          | 13.22 | 13.86 | 14.28 | 15.71 |
|                 | 12H  | 13.31            | 13.69 | 14.38 | 14.77 | 16.19 | 12.86          | 13.24 | 13.93 | 14.32 | 15.74 |
| 8H              | 4H   | 12.76            | 13.18 | 13.82 | 14.25 | 15.67 | 12.38          | 12.81 | 13.44 | 13.87 | 15.29 |
|                 | 6H   | 13.39            | 13.75 | 14.48 | 14.85 | 16.27 | 13.01          | 13.36 | 14.09 | 14.46 | 15.88 |
|                 | 8H   | 13.62            | 13.93 | 14.71 | 15.01 | 16.45 | 13.22          | 13.53 | 14.31 | 14.62 | 16.06 |
|                 | 12H  | 13.75            | 14.02 | 14.84 | 15.10 | 16.58 | 13.34          | 13.61 | 14.43 | 14.69 | 16.17 |
| 12H             | 4H   | 12.74            | 13.13 | 13.82 | 14.20 | 15.63 | 12.38          | 12.76 | 13.45 | 13.83 | 15.26 |
|                 | 6H   | 13.42            | 13.73 | 14.51 | 14.82 | 16.26 | 13.05          | 13.36 | 14.14 | 14.45 | 15.89 |
|                 | 8H   | 13.67            | 13.94 | 14.76 | 15.02 | 16.50 | 13.29          | 13.56 | 14.38 | 14.64 | 16.12 |