

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: P903932

Luminaire Tested: DFN2DIP-SQ3F0-120D120US830-FLLFLL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P903932  
REPORT IS A COMBINATION OF REPORTS P900021 AND P896733  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-SQ3F0-120D120US830-FLLFLL  
Description: 3 foot, Square Define Geo, with Direct Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

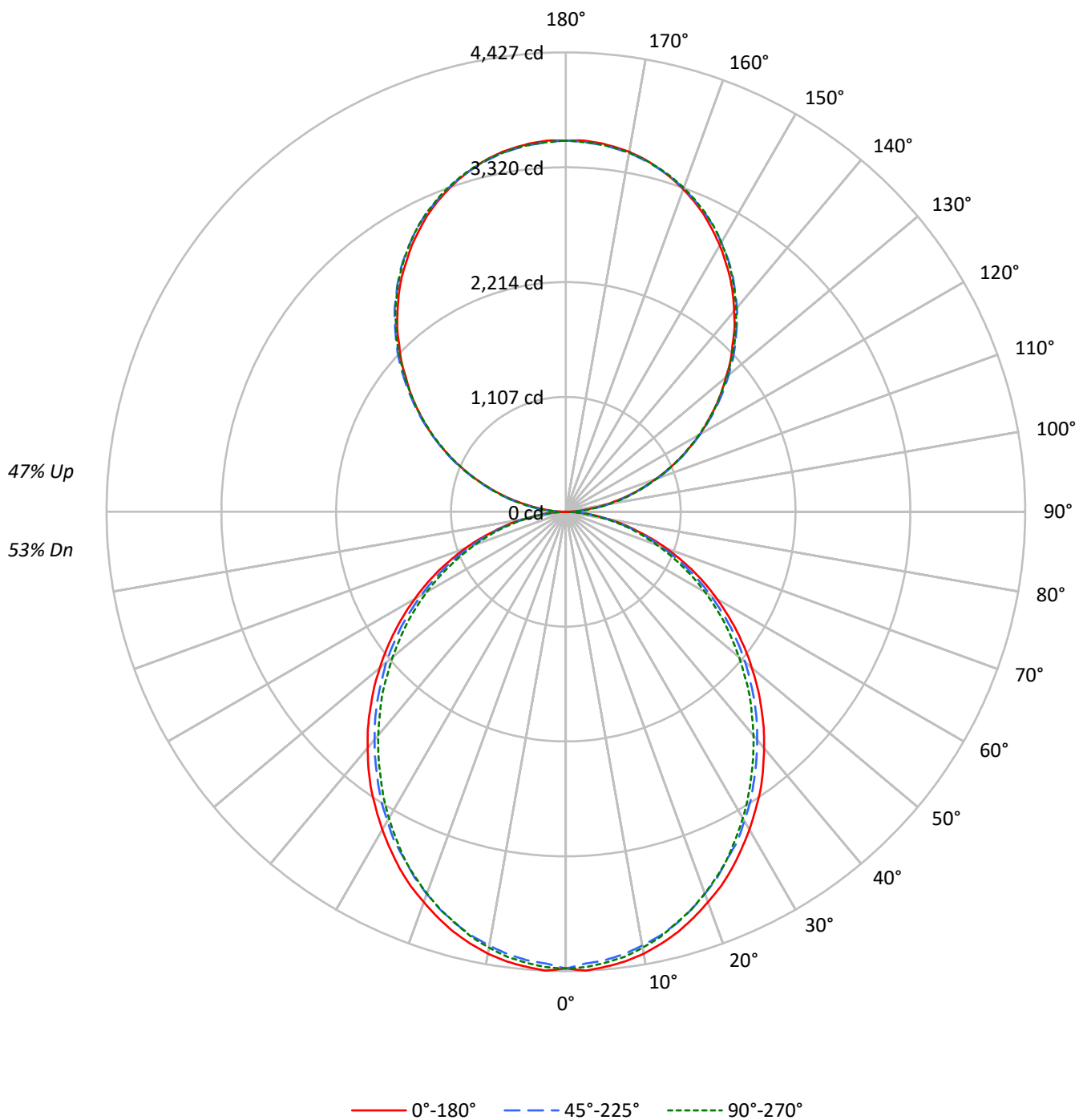
Lumens per Lamp: N/A  
Luminaire Lumens: 21207.2 lumens  
Efficiency: N/A  
Efficacy: 96.4 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29  
Luminous Opening: Rectangular w/ Sides (W: 3.06' x L: 3.06' x H: 0.1')  
CIE Type: General Diffuse

Input Watts (W): 219.9  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9957  
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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CATALOG NUMBER: DFN2DIP-SQ3F0-120D120US830-FLLFLL

### Luminous Intensity Polar Plot



TEST NUMBER: P903932

CATALOG NUMBER: DFN2DIP-SQ3F0-120D120US830-FLLFLL

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

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 5043 | 5043 | 5043 |
| 5°  | 5048 | 4969 | 5004 |
| 10° | 5003 | 4899 | 4935 |
| 15° | 4927 | 4815 | 4827 |
| 20° | 4824 | 4699 | 4717 |
| 25° | 4722 | 4562 | 4590 |
| 30° | 4594 | 4434 | 4430 |
| 35° | 4474 | 4284 | 4259 |
| 40° | 4325 | 4131 | 4097 |
| 45° | 4177 | 3979 | 3931 |
| 50° | 4015 | 3818 | 3739 |
| 55° | 3845 | 3632 | 3562 |
| 60° | 3653 | 3413 | 3360 |
| 65° | 3443 | 3185 | 3121 |
| 70° | 3175 | 2906 | 2863 |
| 75° | 2805 | 2572 | 2622 |
| 80° | 2358 | 2146 | 2168 |
| 85° | 1659 | 1422 | 1419 |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
Vertical Angle: 45°  
Luminance: 4177 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 414.2   | 2.0       |
| 10°-20°   | 1165.5  | 5.5       |
| 20°-30°   | 1712.8  | 8.1       |
| 30°-40°   | 1989.3  | 9.4       |
| 40°-50°   | 1986.8  | 9.4       |
| 50°-60°   | 1732.4  | 8.2       |
| 60°-70°   | 1280.6  | 6.0       |
| 70°-80°   | 724.6   | 3.4       |
| 80°-90°   | 201.4   | 0.9       |
| 90°-100°  | 221.3   | 1.0       |
| 100°-110° | 703.3   | 3.3       |
| 110°-120° | 1203.6  | 5.7       |
| 120°-130° | 1582.9  | 7.5       |
| 130°-140° | 1776.7  | 8.4       |
| 140°-150° | 1742.3  | 8.2       |
| 150°-160° | 1461.5  | 6.9       |
| 160°-170° | 969.3   | 4.6       |
| 170°-180° | 338.8   | 1.6       |
| 0°-30°    | 3292.4  | 15.5      |
| 0°-40°    | 5281.7  | 24.9      |
| 0°-60°    | 9000.9  | 42.4      |
| 0°-90°    | 11207.5 | 52.8      |
| 90°-120°  | 2128.2  | 10.0      |
| 90°-150°  | 7230.1  | 34.1      |
| 90°-180°  | 10000.0 | 47.2      |
| 0°-180°   | 21207.2 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 4401 | 4401  | 4401 | 4401  | 4401 |      |
| 5°   | 4401 | 4384  | 4338 | 4371  | 4363 | 418  |
| 15°  | 4190 | 4164  | 4109 | 4126  | 4105 | 1180 |
| 25°  | 3792 | 3758  | 3686 | 3694  | 3686 | 1745 |
| 35°  | 3271 | 3229  | 3161 | 3136  | 3115 | 2043 |
| 45°  | 2662 | 2632  | 2569 | 2522  | 2505 | 2054 |
| 55°  | 2015 | 1989  | 1938 | 1888  | 1866 | 1801 |
| 65°  | 1359 | 1333  | 1291 | 1253  | 1232 | 1343 |
| 75°  | 711  | 703   | 681  | 656   | 664  | 759  |
| 85°  | 173  | 169   | 165  | 152   | 148  | 193  |
| 90°  | 3    | 39    | 106  | 99    | 102  | 20   |
| 95°  | 157  | 188   | 193  | 193   | 188  | 175  |
| 105° | 649  | 658   | 664  | 670   | 670  | 685  |
| 115° | 1208 | 1225  | 1220 | 1216  | 1208 | 1195 |
| 125° | 1757 | 1784  | 1775 | 1765  | 1762 | 1570 |
| 135° | 2272 | 2306  | 2312 | 2309  | 2300 | 1756 |
| 145° | 2758 | 2780  | 2797 | 2801  | 2789 | 1724 |
| 155° | 3154 | 3163  | 3173 | 3188  | 3178 | 1452 |
| 165° | 3432 | 3428  | 3428 | 3450  | 3435 | 968  |
| 175° | 3571 | 3562  | 3556 | 3577  | 3559 | 339  |
| 180° | 3577 | 3577  | 3577 | 3577  | 3577 |      |

TEST NUMBER: P903932

CATALOG NUMBER: DFN2DIP-SQ3F0-120D120US830-FLLFLL

**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 4401.0 | 4401.0 | 4401.0 | 4401.0 | 4401.0 |
| 2.5°   | 4426.6 | 4405.4 | 4358.8 | 4401.0 | 4392.9 |
| 5°     | 4401.0 | 4384.3 | 4337.7 | 4371.3 | 4363.2 |
| 7.5°   | 4371.3 | 4346.2 | 4299.5 | 4333.6 | 4325.1 |
| 10°    | 4325.1 | 4295.4 | 4244.7 | 4278.4 | 4265.9 |
| 12.5°  | 4261.3 | 4236.2 | 4185.5 | 4206.6 | 4198.0 |
| 15°    | 4189.5 | 4164.3 | 4109.1 | 4126.2 | 4105.1 |
| 17.5°  | 4100.6 | 4075.5 | 4020.2 | 4041.3 | 4020.2 |
| 20°    | 4003.2 | 3978.0 | 3918.8 | 3931.3 | 3914.8 |
| 22.5°  | 3906.2 | 3868.0 | 3812.8 | 3812.8 | 3804.3 |
| 25°    | 3791.7 | 3758.0 | 3686.2 | 3694.3 | 3686.2 |
| 27.5°  | 3664.6 | 3635.0 | 3580.2 | 3567.6 | 3546.6 |
| 30°    | 3538.0 | 3503.9 | 3440.6 | 3428.0 | 3411.0 |
| 32.5°  | 3402.4 | 3377.3 | 3309.5 | 3283.9 | 3266.9 |
| 35°    | 3271.3 | 3229.1 | 3161.3 | 3135.7 | 3114.6 |
| 37.5°  | 3123.1 | 3085.0 | 3017.2 | 2987.6 | 2966.5 |
| 40°    | 2971.0 | 2936.9 | 2869.0 | 2831.3 | 2814.2 |
| 42.5°  | 2822.8 | 2788.7 | 2721.3 | 2678.7 | 2653.5 |
| 45°    | 2662.0 | 2632.4 | 2568.6 | 2522.4 | 2505.4 |
| 47.5°  | 2505.4 | 2475.7 | 2407.9 | 2361.3 | 2336.1 |
| 50°    | 2340.1 | 2319.0 | 2259.7 | 2200.5 | 2179.3 |
| 52.5°  | 2179.3 | 2149.8 | 2095.0 | 2048.2 | 2018.6 |
| 55°    | 2014.6 | 1989.0 | 1938.2 | 1887.5 | 1866.4 |
| 57.5°  | 1849.4 | 1828.2 | 1773.0 | 1722.3 | 1705.2 |
| 60°    | 1684.1 | 1667.5 | 1608.3 | 1561.6 | 1549.0 |
| 62.5°  | 1523.4 | 1493.7 | 1451.6 | 1409.4 | 1392.3 |
| 65°    | 1358.7 | 1333.0 | 1290.8 | 1252.6 | 1231.6 |
| 67.5°  | 1189.4 | 1167.8 | 1130.1 | 1100.5 | 1083.5 |
| 70°    | 1032.6 | 1015.6 | 977.4  | 947.8  | 931.2  |
| 72.5°  | 871.9  | 854.9  | 833.8  | 804.2  | 791.5  |
| 75°    | 710.8  | 702.7  | 681.1  | 656.0  | 664.5  |
| 77.5°  | 567.0  | 550.0  | 541.5  | 528.9  | 516.3  |
| 80°    | 423.4  | 418.9  | 410.4  | 397.8  | 389.3  |
| 82.5°  | 287.8  | 287.8  | 283.8  | 266.7  | 266.7  |
| 85°    | 173.3  | 169.3  | 165.2  | 152.2  | 148.2  |
| 87.5°  | 76.3   | 67.8   | 59.3   | 46.7   | 42.2   |
| 90°    | 3.2    | 38.8   | 105.7  | 99.2   | 102.5  |
| 92.5°  | 66.8   | 90.6   | 93.8   | 97.1   | 97.1   |
| 95°    | 157.4  | 187.7  | 193.0  | 193.0  | 187.7  |
| 97.5°  | 262.0  | 290.1  | 302.0  | 302.0  | 302.0  |
| 100°   | 382.9  | 407.6  | 416.2  | 416.2  | 413.0  |
| 102.5° | 510.1  | 528.4  | 540.3  | 543.6  | 540.3  |
| 105°   | 649.2  | 657.8  | 664.3  | 669.7  | 669.7  |
| 107.5° | 787.2  | 800.2  | 800.2  | 802.3  | 787.2  |
| 110°   | 921.0  | 938.2  | 938.2  | 938.2  | 929.6  |

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**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 1065.4 | 1083.8 | 1080.5 | 1072.0 | 1065.4 |
| 115°   | 1207.8 | 1225.1 | 1219.6 | 1216.4 | 1207.8 |
| 117.5° | 1349.1 | 1372.8 | 1357.7 | 1349.1 | 1340.5 |
| 120°   | 1491.5 | 1515.1 | 1491.5 | 1491.5 | 1481.8 |
| 122.5° | 1620.9 | 1651.1 | 1636.0 | 1627.3 | 1620.9 |
| 125°   | 1756.7 | 1783.7 | 1775.1 | 1765.4 | 1762.1 |
| 127.5° | 1889.4 | 1922.8 | 1910.9 | 1898.0 | 1889.4 |
| 130°   | 2013.4 | 2052.2 | 2046.8 | 2040.3 | 2028.4 |
| 132.5° | 2152.5 | 2182.7 | 2184.8 | 2169.7 | 2161.2 |
| 135°   | 2272.2 | 2305.6 | 2312.2 | 2308.9 | 2300.3 |
| 137.5° | 2405.9 | 2432.9 | 2438.3 | 2436.1 | 2423.2 |
| 140°   | 2523.5 | 2550.4 | 2565.5 | 2565.5 | 2553.6 |
| 142.5° | 2644.3 | 2671.3 | 2679.8 | 2683.0 | 2671.3 |
| 145°   | 2758.5 | 2780.1 | 2797.4 | 2800.7 | 2788.8 |
| 147.5° | 2861.0 | 2887.9 | 2901.0 | 2906.3 | 2894.5 |
| 150°   | 2966.7 | 2985.0 | 2996.9 | 3006.6 | 2996.9 |
| 152.5° | 3060.5 | 3078.8 | 3094.0 | 3105.9 | 3094.0 |
| 155°   | 3154.3 | 3163.0 | 3172.7 | 3187.8 | 3178.1 |
| 157.5° | 3235.3 | 3241.7 | 3247.1 | 3268.6 | 3253.6 |
| 160°   | 3307.5 | 3314.0 | 3317.2 | 3335.6 | 3322.6 |
| 162.5° | 3374.3 | 3374.3 | 3377.6 | 3398.1 | 3383.0 |
| 165°   | 3431.5 | 3428.3 | 3428.3 | 3449.8 | 3434.7 |
| 167.5° | 3483.3 | 3473.6 | 3473.6 | 3495.1 | 3480.1 |
| 170°   | 3522.1 | 3513.4 | 3510.2 | 3531.8 | 3513.4 |
| 172.5° | 3549.0 | 3540.4 | 3537.2 | 3558.8 | 3540.4 |
| 175°   | 3570.6 | 3562.0 | 3555.6 | 3577.0 | 3558.8 |
| 177.5° | 3582.5 | 3573.8 | 3567.3 | 3585.7 | 3567.3 |
| 180°   | 3577.0 | 3577.0 | 3577.0 | 3577.0 | 3577.0 |

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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 | 13.12            | 14.00 | 14.05 | 14.95 | 16.18 | 12.67          | 13.56 | 13.60 | 14.51 | 15.74 |
|                 | 3H   | 14.78            | 15.57 | 15.72 | 16.53 | 17.78 | 14.29          | 15.08 | 15.23 | 16.04 | 17.29 |
|                 | 4H   | 15.36            | 16.11 | 16.32 | 17.08 | 18.34 | 14.87          | 15.62 | 15.83 | 16.58 | 17.85 |
|                 | 6H   | 15.76            | 16.45 | 16.73 | 17.42 | 18.70 | 15.26          | 15.95 | 16.23 | 16.92 | 18.20 |
|                 | 8H   | 15.86            | 16.52 | 16.84 | 17.51 | 18.78 | 15.36          | 16.02 | 16.34 | 17.01 | 18.28 |
|                 | 12H  | 15.91            | 16.54 | 16.89 | 17.52 | 18.82 | 15.40          | 16.03 | 16.38 | 17.01 | 18.31 |
| 4H              | 2H   | 13.58            | 14.33 | 14.54 | 15.29 | 16.56 | 13.22          | 13.98 | 14.19 | 14.94 | 16.20 |
|                 | 3H   | 15.44            | 16.07 | 16.41 | 17.06 | 18.34 | 15.03          | 15.66 | 16.01 | 16.65 | 17.93 |
|                 | 4H   | 16.15            | 16.73 | 17.13 | 17.71 | 19.01 | 15.73          | 16.30 | 16.71 | 17.29 | 18.59 |
|                 | 6H   | 16.66            | 17.16 | 17.66 | 18.17 | 19.47 | 16.23          | 16.73 | 17.23 | 17.74 | 19.04 |
|                 | 8H   | 16.81            | 17.28 | 17.81 | 18.28 | 19.59 | 16.38          | 16.84 | 17.37 | 17.84 | 19.15 |
|                 | 12H  | 16.88            | 17.30 | 17.90 | 18.32 | 19.64 | 16.44          | 16.85 | 17.45 | 17.87 | 19.19 |
| 8H              | 4H   | 16.35            | 16.81 | 17.34 | 17.81 | 19.13 | 15.97          | 16.43 | 16.97 | 17.44 | 18.75 |
|                 | 6H   | 16.97            | 17.36 | 17.99 | 18.40 | 19.71 | 16.59          | 16.97 | 17.61 | 18.02 | 19.33 |
|                 | 8H   | 17.19            | 17.53 | 18.22 | 18.56 | 19.89 | 16.80          | 17.14 | 17.83 | 18.17 | 19.50 |
|                 | 12H  | 17.32            | 17.62 | 18.35 | 18.64 | 20.02 | 16.91          | 17.21 | 17.94 | 18.23 | 19.61 |
| 12H             | 4H   | 16.33            | 16.75 | 17.35 | 17.77 | 19.09 | 15.96          | 16.38 | 16.98 | 17.40 | 18.72 |
|                 | 6H   | 17.00            | 17.34 | 18.03 | 18.37 | 19.70 | 16.63          | 16.97 | 17.66 | 18.00 | 19.33 |
|                 | 8H   | 17.24            | 17.54 | 18.27 | 18.56 | 19.94 | 16.86          | 17.16 | 17.89 | 18.18 | 19.56 |