

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: P911968

Luminaire Tested: DFN2DIP-SQ3F0-080D110US850-FLLFLL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P911968
REPORT IS A COMBINATION OF REPORTS P899995 AND P896733
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-SQ3F0-080D110US850-FLLFLL
Description: 3 foot, Square Define Geo, with Direct Frosted Lens, Indirect Frosted Lens
Light Source: -
Ballast/Driver: -

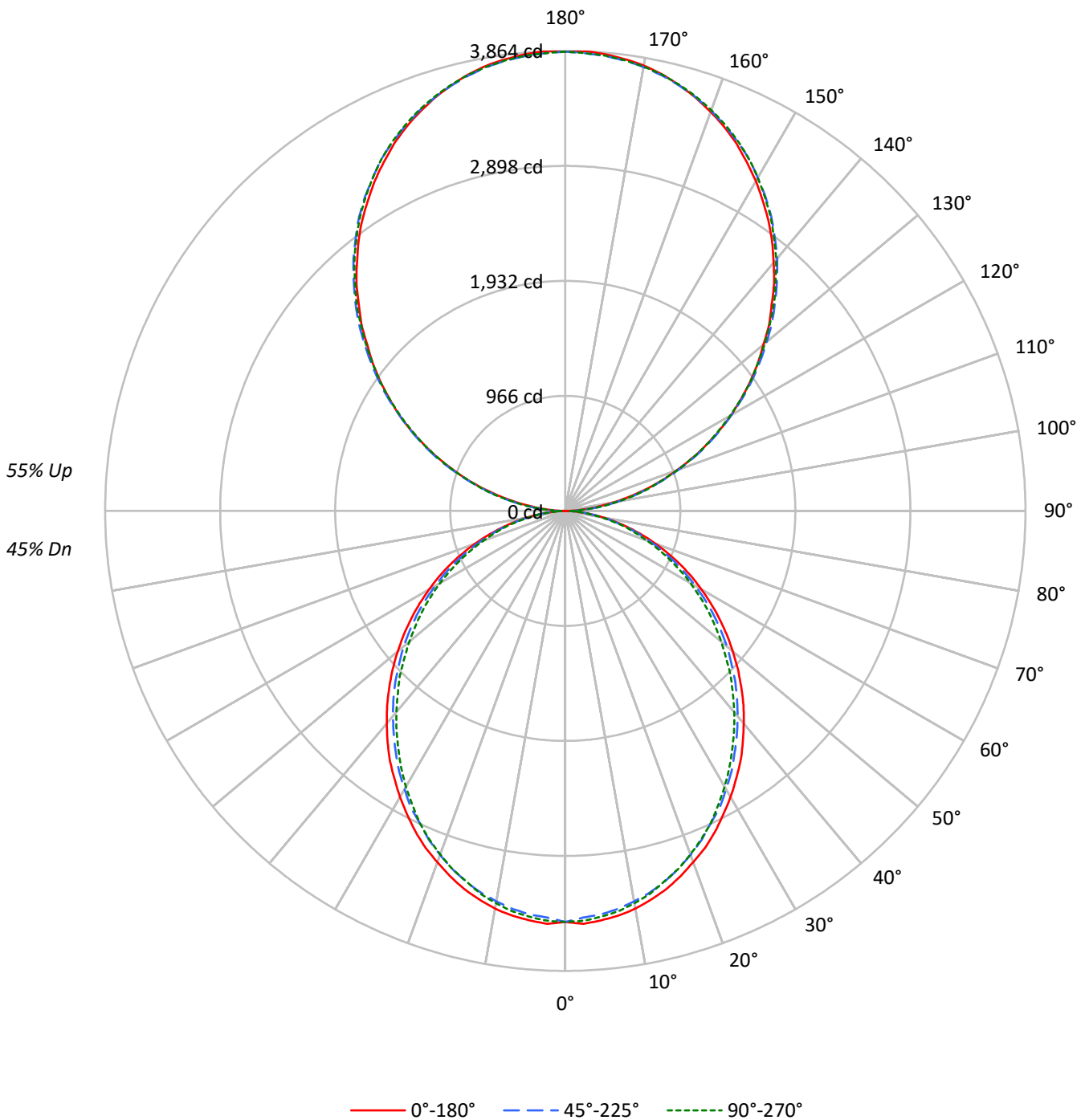
Summary

Lumens per Lamp: N/A
Luminaire Lumens: 19579.4 lumens
Efficiency: N/A
Efficacy: 120.8 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): 162.1
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

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Luminous Intensity Polar Plot



TEST NUMBER: P911968

CATALOG NUMBER: DFN2DIP-SQ3F0-080D110US850-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 | 50 | 30 | 10 | 50 | 30 | 10 | 0 | | | | |
| RCR | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0 | 106 | 106 | 106 | 106 | 97 | 97 | 97 | 97 | 81 | 81 | 81 | 65 | 65 | 65 | 51 | 51 | 51 | 45 | | | | | | | | | | | | | |
| 1 | 97 | 92 | 88 | 85 | 88 | 85 | 81 | 78 | 71 | 68 | 66 | 57 | 56 | 54 | 45 | 44 | 43 | 38 | | | | | | | | | | | | | |
| 2 | 88 | 81 | 75 | 69 | 80 | 74 | 69 | 64 | 62 | 58 | 55 | 50 | 48 | 45 | 40 | 38 | 37 | 32 | | | | | | | | | | | | | |
| 3 | 80 | 71 | 64 | 58 | 73 | 65 | 59 | 54 | 55 | 50 | 46 | 45 | 41 | 38 | 35 | 33 | 31 | 27 | | | | | | | | | | | | | |
| 4 | 73 | 63 | 55 | 49 | 67 | 58 | 51 | 46 | 48 | 43 | 39 | 40 | 36 | 33 | 32 | 29 | 27 | 23 | | | | | | | | | | | | | |
| 5 | 67 | 56 | 48 | 42 | 61 | 51 | 44 | 39 | 43 | 38 | 34 | 36 | 32 | 28 | 29 | 26 | 23 | 20 | | | | | | | | | | | | | |
| 6 | 62 | 50 | 42 | 36 | 57 | 46 | 39 | 34 | 39 | 33 | 29 | 32 | 28 | 25 | 26 | 23 | 21 | 18 | | | | | | | | | | | | | |
| 7 | 57 | 45 | 37 | 32 | 52 | 42 | 35 | 30 | 35 | 30 | 26 | 29 | 25 | 22 | 24 | 21 | 18 | 16 | | | | | | | | | | | | | |
| 8 | 53 | 41 | 33 | 28 | 49 | 38 | 31 | 26 | 32 | 27 | 23 | 27 | 23 | 20 | 22 | 19 | 16 | 14 | | | | | | | | | | | | | |
| 9 | 49 | 37 | 30 | 25 | 45 | 35 | 28 | 23 | 29 | 24 | 21 | 25 | 21 | 18 | 20 | 17 | 15 | 13 | | | | | | | | | | | | | |
| 10 | 46 | 34 | 27 | 22 | 42 | 32 | 25 | 21 | 27 | 22 | 18 | 23 | 19 | 16 | 19 | 16 | 13 | 11 | | | | | | | | | | | | | |

AVERAGE LUMINANCE (cd/sqm):

| | 0° | 45° | 90° |
|-----|------|------|------|
| 0° | 3955 | 3955 | 3955 |
| 5° | 3959 | 3898 | 3925 |
| 10° | 3925 | 3843 | 3871 |
| 15° | 3864 | 3777 | 3787 |
| 20° | 3784 | 3686 | 3700 |
| 25° | 3704 | 3579 | 3601 |
| 30° | 3604 | 3478 | 3475 |
| 35° | 3509 | 3360 | 3341 |
| 40° | 3393 | 3241 | 3214 |
| 45° | 3277 | 3121 | 3084 |
| 50° | 3150 | 2995 | 2933 |
| 55° | 3016 | 2849 | 2794 |
| 60° | 2865 | 2677 | 2635 |
| 65° | 2700 | 2498 | 2448 |
| 70° | 2490 | 2280 | 2246 |
| 75° | 2200 | 2018 | 2057 |
| 80° | 1849 | 1683 | 1700 |
| 85° | 1302 | 1115 | 1113 |

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 90°
 Vertical Angle: 90°
 Luminance: 3881 cd/sqm



TEST NUMBER: P911968

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ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|---------|-----------|
| 0°-10° | 324.9 | 1.7 |
| 10°-20° | 914.2 | 4.7 |
| 20°-30° | 1343.5 | 6.9 |
| 30°-40° | 1560.4 | 8.0 |
| 40°-50° | 1558.4 | 8.0 |
| 50°-60° | 1358.9 | 6.9 |
| 60°-70° | 1004.5 | 5.1 |
| 70°-80° | 568.4 | 2.9 |
| 80°-90° | 161.0 | 0.8 |
| 90°-100° | 238.7 | 1.2 |
| 100°-110° | 758.6 | 3.9 |
| 110°-120° | 1298.1 | 6.6 |
| 120°-130° | 1707.2 | 8.7 |
| 130°-140° | 1916.3 | 9.8 |
| 140°-150° | 1879.1 | 9.6 |
| 150°-160° | 1576.3 | 8.1 |
| 160°-170° | 1045.4 | 5.3 |
| 170°-180° | 365.4 | 1.9 |
| 0°-30° | 2582.6 | 13.2 |
| 0°-40° | 4143.0 | 21.2 |
| 0°-60° | 7060.4 | 36.1 |
| 0°-90° | 8794.2 | 44.9 |
| 90°-120° | 2295.4 | 11.7 |
| 90°-150° | 7798.0 | 39.8 |
| 90°-180° | 10785.0 | 55.1 |
| 0°-180° | 19579.4 | 100.0 |

CANDELA DISTRIBUTION:

| | 0° | 22.5° | 45° | 67.5° | 90° | Flux |
|------|------|-------|------|-------|------|------|
| 0° | 3452 | 3452 | 3452 | 3452 | 3452 | |
| 5° | 3452 | 3439 | 3402 | 3429 | 3423 | 328 |
| 15° | 3286 | 3267 | 3223 | 3237 | 3220 | 926 |
| 25° | 2974 | 2948 | 2892 | 2898 | 2892 | 1369 |
| 35° | 2566 | 2533 | 2480 | 2460 | 2443 | 1602 |
| 45° | 2088 | 2065 | 2015 | 1979 | 1965 | 1612 |
| 55° | 1580 | 1560 | 1520 | 1481 | 1464 | 1413 |
| 65° | 1066 | 1046 | 1012 | 983 | 966 | 1054 |
| 75° | 558 | 551 | 534 | 515 | 521 | 595 |
| 85° | 136 | 133 | 130 | 119 | 116 | 152 |
| 90° | 3 | 42 | 114 | 107 | 110 | 19 |
| 95° | 170 | 202 | 208 | 208 | 202 | 189 |
| 105° | 700 | 710 | 716 | 722 | 722 | 739 |
| 115° | 1303 | 1321 | 1316 | 1312 | 1303 | 1288 |
| 125° | 1895 | 1924 | 1914 | 1904 | 1900 | 1693 |
| 135° | 2451 | 2487 | 2494 | 2490 | 2481 | 1894 |
| 145° | 2975 | 2998 | 3017 | 3021 | 3008 | 1859 |
| 155° | 3402 | 3411 | 3422 | 3438 | 3428 | 1566 |
| 165° | 3701 | 3698 | 3698 | 3721 | 3704 | 1044 |
| 175° | 3851 | 3842 | 3835 | 3858 | 3838 | 366 |
| 180° | 3858 | 3858 | 3858 | 3858 | 3858 | |



TEST NUMBER: P911968

CATALOG NUMBER: DFN2DIP-SQ3F0-080D110US850-FLLFLL

CANDELA DISTRIBUTION (FULL):

| | 0° | 22.5° | 45° | 67.5° | 90° |
|--------|--------|--------|--------|--------|--------|
| 0° | 3452.1 | 3452.1 | 3452.1 | 3452.1 | 3452.1 |
| 2.5° | 3472.2 | 3455.6 | 3419.0 | 3452.1 | 3445.8 |
| 5° | 3452.1 | 3439.1 | 3402.5 | 3428.9 | 3422.6 |
| 7.5° | 3428.9 | 3409.2 | 3372.6 | 3399.3 | 3392.7 |
| 10° | 3392.7 | 3369.4 | 3329.6 | 3355.9 | 3346.2 |
| 12.5° | 3342.6 | 3322.9 | 3283.1 | 3299.6 | 3293.0 |
| 15° | 3286.3 | 3266.6 | 3223.2 | 3236.6 | 3220.1 |
| 17.5° | 3216.5 | 3196.8 | 3153.4 | 3170.1 | 3153.4 |
| 20° | 3140.1 | 3120.4 | 3073.9 | 3083.8 | 3070.7 |
| 22.5° | 3064.1 | 3034.1 | 2990.8 | 2990.8 | 2984.1 |
| 25° | 2974.2 | 2947.8 | 2891.5 | 2897.8 | 2891.5 |
| 27.5° | 2874.5 | 2851.3 | 2808.3 | 2798.5 | 2781.9 |
| 30° | 2775.3 | 2748.4 | 2698.9 | 2689.0 | 2675.6 |
| 32.5° | 2668.9 | 2649.2 | 2595.9 | 2575.9 | 2562.6 |
| 35° | 2566.0 | 2533.0 | 2479.7 | 2459.7 | 2443.1 |
| 37.5° | 2449.8 | 2419.8 | 2366.7 | 2343.4 | 2326.9 |
| 40° | 2330.5 | 2303.6 | 2250.5 | 2220.9 | 2207.5 |
| 42.5° | 2214.2 | 2187.4 | 2134.6 | 2101.1 | 2081.5 |
| 45° | 2088.1 | 2064.8 | 2014.8 | 1978.6 | 1965.3 |
| 47.5° | 1965.3 | 1942.0 | 1888.7 | 1852.1 | 1832.4 |
| 50° | 1835.6 | 1819.1 | 1772.5 | 1726.0 | 1709.5 |
| 52.5° | 1709.5 | 1686.2 | 1643.3 | 1606.7 | 1583.4 |
| 55° | 1580.2 | 1560.1 | 1520.4 | 1480.6 | 1464.0 |
| 57.5° | 1450.7 | 1434.2 | 1390.8 | 1351.0 | 1337.6 |
| 60° | 1321.0 | 1308.1 | 1261.5 | 1224.9 | 1215.0 |
| 62.5° | 1194.9 | 1171.8 | 1138.6 | 1105.6 | 1092.1 |
| 65° | 1065.7 | 1045.7 | 1012.5 | 982.6 | 966.0 |
| 67.5° | 932.9 | 916.0 | 886.4 | 863.2 | 849.8 |
| 70° | 810.0 | 796.6 | 766.8 | 743.5 | 730.4 |
| 72.5° | 683.9 | 670.6 | 654.0 | 630.8 | 620.9 |
| 75° | 557.5 | 551.2 | 534.3 | 514.6 | 521.2 |
| 77.5° | 444.8 | 431.4 | 424.7 | 414.9 | 405.0 |
| 80° | 332.1 | 328.6 | 321.9 | 312.1 | 305.3 |
| 82.5° | 225.8 | 225.8 | 222.6 | 209.2 | 209.2 |
| 85° | 136.0 | 132.7 | 129.6 | 119.4 | 116.2 |
| 87.5° | 59.9 | 53.2 | 46.5 | 36.6 | 33.2 |
| 90° | 3.4 | 41.9 | 114.0 | 107.0 | 110.5 |
| 92.5° | 72.1 | 97.7 | 101.1 | 104.7 | 104.7 |
| 95° | 169.8 | 202.4 | 208.2 | 208.2 | 202.4 |
| 97.5° | 282.7 | 312.8 | 325.7 | 325.7 | 325.7 |
| 100° | 412.9 | 439.6 | 448.9 | 448.9 | 445.5 |
| 102.5° | 550.2 | 569.9 | 582.8 | 586.2 | 582.8 |
| 105° | 700.2 | 709.5 | 716.5 | 722.3 | 722.3 |
| 107.5° | 849.1 | 863.0 | 863.0 | 865.4 | 849.1 |
| 110° | 993.3 | 1012.0 | 1012.0 | 1012.0 | 1002.6 |



TEST NUMBER: P911968

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CANDELA DISTRIBUTION (continued):

| | 0° | 22.5° | 45° | 67.5° | 90° |
|--------|---------------|---------------|---------------|---------------|---------------|
| 112.5° | 1149.1 | 1168.9 | 1165.4 | <i>1156.1</i> | 1149.1 |
| 115° | 1302.7 | 1321.3 | 1315.5 | <i>1312.1</i> | 1302.7 |
| 117.5° | 1455.1 | 1480.6 | 1464.3 | <i>1455.1</i> | 1445.8 |
| 120° | 1608.6 | 1634.2 | 1608.6 | <i>1608.6</i> | 1598.2 |
| 122.5° | 1748.2 | 1780.7 | 1764.4 | <i>1755.1</i> | 1748.2 |
| 125° | 1894.7 | 1923.8 | 1914.5 | <i>1904.0</i> | 1900.5 |
| 127.5° | 2037.8 | 2073.8 | 2061.1 | <i>2047.1</i> | 2037.8 |
| 130° | 2171.5 | 2213.5 | 2207.6 | <i>2200.6</i> | 2187.8 |
| 132.5° | 2321.6 | 2354.2 | 2356.5 | <i>2340.2</i> | 2330.9 |
| 135° | 2450.7 | 2486.7 | 2493.7 | <i>2490.3</i> | 2480.9 |
| 137.5° | 2594.9 | 2624.0 | 2629.8 | <i>2627.4</i> | 2613.6 |
| 140° | 2721.7 | 2750.8 | 2767.1 | <i>2767.1</i> | 2754.3 |
| 142.5° | 2852.0 | 2881.1 | 2890.4 | <i>2893.8</i> | 2881.1 |
| 145° | 2975.2 | 2998.5 | 3017.1 | <i>3020.6</i> | 3007.8 |
| 147.5° | 3085.8 | 3114.8 | 3128.8 | <i>3134.6</i> | 3121.8 |
| 150° | 3199.8 | 3219.5 | 3232.3 | <i>3242.8</i> | 3232.3 |
| 152.5° | 3300.9 | 3320.7 | 3337.0 | <i>3349.8</i> | 3337.0 |
| 155° | 3402.2 | 3411.4 | 3421.9 | <i>3438.2</i> | 3427.7 |
| 157.5° | 3489.4 | 3496.3 | 3502.1 | <i>3525.4</i> | 3509.1 |
| 160° | 3567.3 | 3574.3 | 3577.7 | <i>3597.6</i> | 3583.6 |
| 162.5° | 3639.4 | 3639.4 | 3643.0 | <i>3665.0</i> | 3648.7 |
| 165° | 3701.1 | 3697.5 | 3697.5 | <i>3720.8</i> | 3704.5 |
| 167.5° | 3756.8 | 3746.4 | 3746.4 | <i>3769.7</i> | 3753.4 |
| 170° | 3798.8 | 3789.5 | 3786.0 | <i>3809.2</i> | 3789.5 |
| 172.5° | 3827.8 | 3818.5 | 3815.1 | <i>3838.4</i> | 3818.5 |
| 175° | 3851.1 | 3841.8 | 3834.8 | <i>3858.1</i> | 3838.4 |
| 177.5° | <i>3863.9</i> | <i>3854.6</i> | <i>3847.6</i> | <i>3867.4</i> | <i>3847.6</i> |
| 180° | 3858.1 | 3858.1 | 3858.1 | <i>3858.1</i> | 3858.1 |



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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 | 11.52 | 12.34 | 12.52 | 13.35 | 14.69 | 11.08 | 11.90 | 12.08 | 12.91 | 14.25 |
| | 3H | 13.18 | 13.91 | 14.19 | 14.93 | 16.29 | 12.69 | 13.42 | 13.70 | 14.44 | 15.80 |
| | 4H | 13.76 | 14.45 | 14.78 | 15.48 | 16.85 | 13.27 | 13.96 | 14.29 | 14.98 | 16.35 |
| | 6H | 14.15 | 14.79 | 15.19 | 15.82 | 17.20 | 13.65 | 14.29 | 14.69 | 15.32 | 16.70 |
| | 8H | 14.26 | 14.86 | 15.29 | 15.91 | 17.29 | 13.75 | 14.36 | 14.79 | 15.41 | 16.78 |
| | 12H | 14.30 | 14.88 | 15.34 | 15.92 | 17.32 | 13.79 | 14.37 | 14.83 | 15.41 | 16.81 |
| 4H | 2H | 11.98 | 12.67 | 13.01 | 13.69 | 15.06 | 11.62 | 12.32 | 12.65 | 13.34 | 14.71 |
| | 3H | 13.83 | 14.41 | 14.87 | 15.46 | 16.85 | 13.42 | 14.00 | 14.46 | 15.06 | 16.44 |
| | 4H | 14.54 | 15.07 | 15.59 | 16.11 | 17.52 | 14.12 | 14.65 | 15.16 | 15.69 | 17.10 |
| | 6H | 15.05 | 15.51 | 16.10 | 16.57 | 17.97 | 14.62 | 15.07 | 15.67 | 16.14 | 17.54 |
| | 8H | 15.20 | 15.62 | 16.25 | 16.68 | 18.10 | 14.76 | 15.19 | 15.81 | 16.24 | 17.66 |
| | 12H | 15.26 | 15.65 | 16.34 | 16.72 | 18.15 | 14.82 | 15.20 | 15.89 | 16.27 | 17.70 |
| 8H | 4H | 14.73 | 15.16 | 15.79 | 16.22 | 17.63 | 14.35 | 14.78 | 15.41 | 15.84 | 17.25 |
| | 6H | 15.35 | 15.71 | 16.43 | 16.81 | 18.22 | 14.97 | 15.32 | 16.05 | 16.42 | 17.84 |
| | 8H | 15.57 | 15.88 | 16.66 | 16.96 | 18.40 | 15.18 | 15.49 | 16.26 | 16.57 | 18.00 |
| | 12H | 15.70 | 15.97 | 16.79 | 17.05 | 18.52 | 15.29 | 15.56 | 16.38 | 16.64 | 18.11 |
| 12H | 4H | 14.71 | 15.10 | 15.79 | 16.17 | 17.59 | 14.34 | 14.73 | 15.42 | 15.80 | 17.22 |
| | 6H | 15.38 | 15.69 | 16.47 | 16.78 | 18.21 | 15.01 | 15.32 | 16.09 | 16.40 | 17.84 |
| | 8H | 15.62 | 15.89 | 16.71 | 16.97 | 18.44 | 15.24 | 15.51 | 16.33 | 16.59 | 18.06 |