

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: P925746

Luminaire Tested: DFN2DIP-SQ3F0-120D090US950-RLLFLL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P925746  
REPORT IS A COMBINATION OF REPORTS P899968 AND P896733  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-SQ3F0-120D090US950-RLLFLL  
Description: 3 foot, Square Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

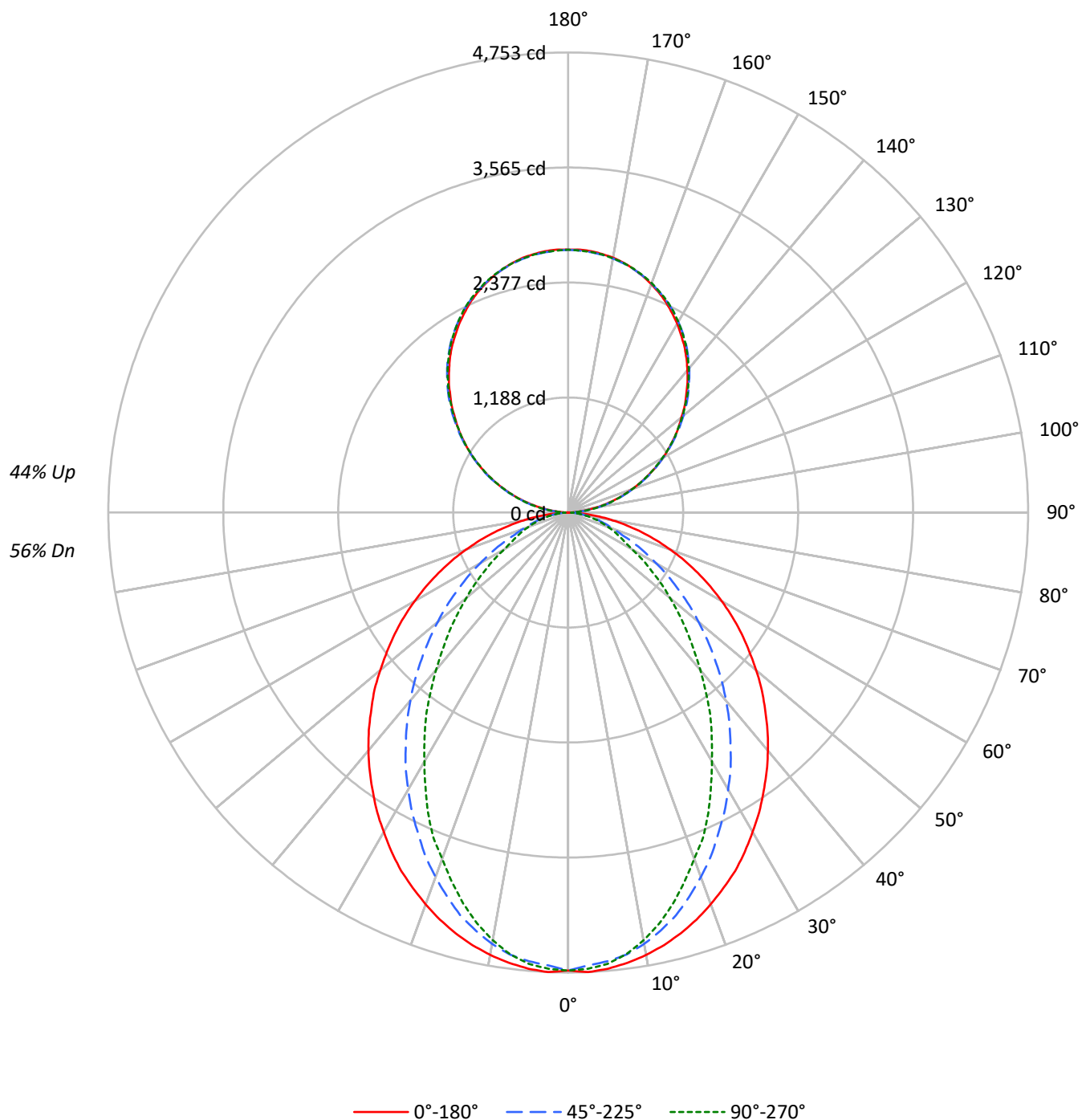
Lumens per Lamp: N/A  
Luminaire Lumens: 17329.4 lumens  
Efficiency: N/A  
Efficacy: 89.2 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16  
Luminous Opening: Rectangular w/ Sides (W: 3.06' x L: 3.06' x H: 0.1')  
CIE Type: General Diffuse

Input Watts (W): 194.3  
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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### Luminous Intensity Polar Plot



TEST NUMBER: P925746

CATALOG NUMBER: DFN2DIP-SQ3F0-120D090US950-RLLFLL

**COEFFICIENT OF UTILIZATION - ZONAL CAVITY METHOD:**

|     |     |     |     |     |     |     |     |     |    |    |    |    |    |    |    |    |    |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|----|----|----|----|----|----|----|----|----|
| RF  | 20  |     |     |     | 20  |     |     |     | 20 |    |    |    | 20 |    |    |    | 20 |
| RC  | 80  |     |     |     | 70  |     |     |     | 50 |    |    |    | 30 |    |    |    | 10 |
| RW  | 70  | 50  | 30  | 10  | 70  | 50  | 30  | 10  | 50 | 30 | 10 | 50 | 30 | 10 | 50 | 30 | 10 |
| RCR |     |     |     |     |     |     |     |     |    |    |    |    |    |    |    |    |    |
| 0   | 109 | 109 | 109 | 109 | 101 | 101 | 101 | 101 | 87 | 87 | 87 | 74 | 74 | 74 | 62 | 62 | 62 |
| 1   | 100 | 96  | 92  | 88  | 93  | 89  | 86  | 83  | 77 | 75 | 72 | 66 | 64 | 63 | 55 | 54 | 53 |
| 2   | 91  | 84  | 78  | 73  | 85  | 79  | 73  | 69  | 68 | 64 | 61 | 58 | 56 | 53 | 49 | 47 | 46 |
| 3   | 84  | 74  | 67  | 62  | 78  | 70  | 63  | 58  | 61 | 56 | 52 | 52 | 49 | 46 | 44 | 42 | 40 |
| 4   | 77  | 66  | 59  | 53  | 71  | 62  | 55  | 50  | 54 | 49 | 45 | 47 | 43 | 40 | 40 | 37 | 35 |
| 5   | 71  | 59  | 51  | 46  | 66  | 56  | 49  | 43  | 49 | 43 | 39 | 42 | 38 | 35 | 36 | 33 | 30 |
| 6   | 65  | 53  | 46  | 40  | 61  | 50  | 43  | 38  | 44 | 38 | 34 | 38 | 34 | 31 | 33 | 30 | 27 |
| 7   | 61  | 48  | 41  | 35  | 56  | 46  | 39  | 34  | 40 | 35 | 30 | 35 | 31 | 27 | 30 | 27 | 24 |
| 8   | 56  | 44  | 37  | 31  | 52  | 42  | 35  | 30  | 37 | 31 | 27 | 32 | 28 | 25 | 28 | 25 | 22 |
| 9   | 53  | 41  | 33  | 28  | 49  | 38  | 32  | 27  | 34 | 28 | 25 | 30 | 25 | 22 | 26 | 23 | 20 |
| 10  | 49  | 37  | 30  | 25  | 46  | 35  | 29  | 24  | 31 | 26 | 22 | 28 | 23 | 20 | 24 | 21 | 18 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 5421 | 5421 | 5421 |
| 5°  | 5427 | 5332 | 5368 |
| 10° | 5369 | 5224 | 5191 |
| 15° | 5292 | 5047 | 4920 |
| 20° | 5191 | 4806 | 4587 |
| 25° | 5087 | 4536 | 4266 |
| 30° | 4949 | 4260 | 3859 |
| 35° | 4814 | 3963 | 3501 |
| 40° | 4675 | 3656 | 3092 |
| 45° | 4515 | 3316 | 2721 |
| 50° | 4350 | 2974 | 2359 |
| 55° | 4176 | 2608 | 2011 |
| 60° | 3975 | 2226 | 1653 |
| 65° | 3744 | 1838 | 1486 |
| 70° | 3463 | 1476 | 1342 |
| 75° | 3109 | 1294 | 1217 |
| 80° | 2598 | 1074 | 1050 |
| 85° | 1762 | 700  | 778  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 4515 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 443.4   | 2.6       |
| 10°-20°   | 1217.3  | 7.0       |
| 20°-30°   | 1709.1  | 9.9       |
| 30°-40°   | 1863.0  | 10.8      |
| 40°-50°   | 1712.3  | 9.9       |
| 50°-60°   | 1344.7  | 7.8       |
| 60°-70°   | 875.3   | 5.1       |
| 70°-80°   | 450.6   | 2.6       |
| 80°-90°   | 122.7   | 0.7       |
| 90°-100°  | 168.0   | 1.0       |
| 100°-110° | 533.9   | 3.1       |
| 110°-120° | 913.7   | 5.3       |
| 120°-130° | 1201.6  | 6.9       |
| 130°-140° | 1348.7  | 7.8       |
| 140°-150° | 1322.6  | 7.6       |
| 150°-160° | 1109.5  | 6.4       |
| 160°-170° | 735.8   | 4.2       |
| 170°-180° | 257.2   | 1.5       |
| 0°-30°    | 3369.8  | 19.4      |
| 0°-40°    | 5232.8  | 30.2      |
| 0°-60°    | 8289.9  | 47.8      |
| 0°-90°    | 9738.5  | 56.2      |
| 90°-120°  | 1615.6  | 9.3       |
| 90°-150°  | 5488.5  | 31.7      |
| 90°-180°  | 7591.0  | 43.8      |
| 0°-180°   | 17329.4 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 4732 | 4732  | 4732 | 4732  | 4732 |      |
| 5°   | 4732 | 4710  | 4654 | 4693  | 4680 | 449  |
| 15°  | 4500 | 4453  | 4308 | 4226  | 4184 | 1268 |
| 25°  | 4085 | 3948  | 3665 | 3490  | 3425 | 1879 |
| 35°  | 3520 | 3301  | 2925 | 2655  | 2560 | 2203 |
| 45°  | 2878 | 2590  | 2141 | 1837  | 1734 | 2222 |
| 55°  | 2188 | 1854  | 1392 | 1135  | 1054 | 1955 |
| 65°  | 1477 | 1130  | 745  | 600   | 586  | 1465 |
| 75°  | 788  | 488   | 343  | 312   | 308  | 833  |
| 85°  | 184  | 94    | 81   | 81    | 81   | 211  |
| 90°  | 2    | 30    | 80   | 75    | 78   | 17   |
| 95°  | 120  | 142   | 146  | 146   | 142  | 133  |
| 105° | 493  | 499   | 504  | 508   | 508  | 520  |
| 115° | 917  | 930   | 926  | 924   | 917  | 907  |
| 125° | 1334 | 1354  | 1348 | 1340  | 1338 | 1192 |
| 135° | 1725 | 1750  | 1755 | 1753  | 1746 | 1333 |
| 145° | 2094 | 2110  | 2124 | 2126  | 2117 | 1308 |
| 155° | 2394 | 2401  | 2408 | 2420  | 2413 | 1102 |
| 165° | 2605 | 2602  | 2602 | 2619  | 2607 | 735  |
| 175° | 2710 | 2704  | 2699 | 2716  | 2702 | 258  |
| 180° | 2716 | 2716  | 2716 | 2716  | 2716 |      |

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**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 4731.5 | 4731.5 | 4731.5 | 4731.5 | 4731.5 |
| 2.5°   | 4752.8 | 4731.5 | 4684.2 | 4727.4 | 4718.7 |
| 5°     | 4731.5 | 4710.1 | 4654.2 | 4692.8 | 4680.1 |
| 7.5°   | 4692.8 | 4667.3 | 4607.4 | 4624.2 | 4602.9 |
| 10°    | 4641.5 | 4611.5 | 4526.1 | 4512.9 | 4487.5 |
| 12.5°  | 4577.4 | 4538.8 | 4422.9 | 4397.6 | 4350.3 |
| 15°    | 4500.2 | 4453.0 | 4307.6 | 4226.2 | 4183.6 |
| 17.5°  | 4410.2 | 4341.7 | 4161.7 | 4067.8 | 3999.2 |
| 20°    | 4307.6 | 4221.7 | 4007.8 | 3901.0 | 3806.5 |
| 22.5°  | 4196.3 | 4097.7 | 3849.2 | 3703.8 | 3639.8 |
| 25°    | 4085.0 | 3947.7 | 3665.2 | 3489.8 | 3425.3 |
| 27.5°  | 3952.3 | 3806.5 | 3493.9 | 3292.7 | 3194.1 |
| 30°    | 3811.0 | 3648.0 | 3305.4 | 3087.3 | 2971.5 |
| 32.5°  | 3673.9 | 3476.7 | 3126.0 | 2868.9 | 2761.6 |
| 35°    | 3519.9 | 3301.3 | 2924.7 | 2654.9 | 2560.3 |
| 37.5°  | 3369.9 | 3134.2 | 2736.2 | 2440.4 | 2333.7 |
| 40°    | 3211.4 | 2954.7 | 2539.1 | 2235.1 | 2123.8 |
| 42.5°  | 3048.7 | 2774.8 | 2342.4 | 2025.2 | 1918.5 |
| 45°    | 2877.5 | 2590.4 | 2141.1 | 1836.7 | 1734.0 |
| 47.5°  | 2714.8 | 2410.9 | 1948.4 | 1644.1 | 1550.1 |
| 50°    | 2535.0 | 2231.0 | 1759.9 | 1464.2 | 1374.7 |
| 52.5°  | 2359.1 | 2037.9 | 1580.0 | 1297.4 | 1216.2 |
| 55°    | 2187.9 | 1854.0 | 1391.5 | 1134.8 | 1053.5 |
| 57.5°  | 2012.5 | 1670.0 | 1224.7 | 984.9  | 916.3  |
| 60°    | 1832.6 | 1490.1 | 1048.9 | 830.9  | 762.3  |
| 62.5°  | 1657.3 | 1314.7 | 899.0  | 693.7  | 659.6  |
| 65°    | 1477.4 | 1130.3 | 745.1  | 599.7  | 586.5  |
| 67.5°  | 1306.1 | 959.0  | 599.7  | 526.5  | 513.8  |
| 70°    | 1126.2 | 792.3  | 496.6  | 453.8  | 436.6  |
| 72.5°  | 955.0  | 637.8  | 415.2  | 381.1  | 372.5  |
| 75°    | 787.7  | 487.9  | 342.6  | 312.5  | 308.4  |
| 77.5°  | 621.1  | 346.6  | 269.9  | 252.6  | 243.9  |
| 80°    | 466.6  | 248.5  | 205.3  | 188.5  | 188.5  |
| 82.5°  | 325.3  | 167.1  | 141.3  | 132.6  | 132.6  |
| 85°    | 184.0  | 94.1   | 81.3   | 81.3   | 81.3   |
| 87.5°  | 68.6   | 34.1   | 34.1   | 30.0   | 30.0   |
| 90°    | 2.5    | 29.5   | 80.2   | 75.3   | 77.8   |
| 92.5°  | 50.8   | 68.8   | 71.3   | 73.6   | 73.6   |
| 95°    | 119.5  | 142.4  | 146.5  | 146.5  | 142.4  |
| 97.5°  | 198.9  | 220.2  | 229.2  | 229.2  | 229.2  |
| 100°   | 290.6  | 309.5  | 316.0  | 316.0  | 313.6  |
| 102.5° | 387.2  | 401.2  | 410.1  | 412.6  | 410.1  |
| 105°   | 492.8  | 499.3  | 504.3  | 508.4  | 508.4  |
| 107.5° | 597.6  | 607.4  | 607.4  | 609.0  | 597.6  |
| 110°   | 699.1  | 712.3  | 712.3  | 712.3  | 705.7  |

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**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 808.8  | 822.7  | 820.2  | 813.8  | 808.8  |
| 115°   | 916.9  | 930.0  | 925.9  | 923.5  | 916.9  |
| 117.5° | 1024.1 | 1042.1 | 1030.7 | 1024.1 | 1017.5 |
| 120°   | 1132.2 | 1150.1 | 1132.2 | 1132.2 | 1124.8 |
| 122.5° | 1230.4 | 1253.4 | 1241.9 | 1235.3 | 1230.4 |
| 125°   | 1333.6 | 1354.0 | 1347.5 | 1340.1 | 1337.7 |
| 127.5° | 1434.2 | 1459.6 | 1450.7 | 1440.8 | 1434.2 |
| 130°   | 1528.4 | 1557.9 | 1553.8 | 1548.8 | 1539.9 |
| 132.5° | 1634.0 | 1656.9 | 1658.5 | 1647.1 | 1640.6 |
| 135°   | 1724.8 | 1750.2 | 1755.2 | 1752.7 | 1746.2 |
| 137.5° | 1826.3 | 1846.8 | 1851.0 | 1849.3 | 1839.5 |
| 140°   | 1915.6 | 1936.0 | 1947.5 | 1947.5 | 1938.5 |
| 142.5° | 2007.3 | 2027.7 | 2034.3 | 2036.8 | 2027.7 |
| 145°   | 2094.1 | 2110.4 | 2123.5 | 2126.0 | 2117.0 |
| 147.5° | 2171.9 | 2192.3 | 2202.1 | 2206.2 | 2197.3 |
| 150°   | 2252.1 | 2266.0 | 2275.0 | 2282.3 | 2275.0 |
| 152.5° | 2323.3 | 2337.2 | 2348.7 | 2357.7 | 2348.7 |
| 155°   | 2394.5 | 2401.0 | 2408.5 | 2419.9 | 2412.6 |
| 157.5° | 2455.9 | 2460.8 | 2464.9 | 2481.3 | 2469.8 |
| 160°   | 2510.7 | 2515.7 | 2518.2 | 2532.0 | 2522.2 |
| 162.5° | 2561.5 | 2561.5 | 2564.0 | 2579.5 | 2568.1 |
| 165°   | 2604.9 | 2602.4 | 2602.4 | 2618.8 | 2607.4 |
| 167.5° | 2644.2 | 2636.9 | 2636.9 | 2653.2 | 2641.7 |
| 170°   | 2673.7 | 2667.1 | 2664.7 | 2681.0 | 2667.1 |
| 172.5° | 2694.1 | 2687.6 | 2685.1 | 2701.5 | 2687.6 |
| 175°   | 2710.5 | 2703.9 | 2699.1 | 2715.5 | 2701.5 |
| 177.5° | 2719.5 | 2713.0 | 2708.0 | 2722.0 | 2708.0 |
| 180°   | 2715.5 | 2715.5 | 2715.5 | 2715.5 | 2715.5 |

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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 | 13.54            | 14.43 | 14.45 | 15.35 | 16.53 | 9.51           | 10.39 | 10.41 | 11.31 | 12.49 |
|                 | 3H   | 15.22            | 16.01 | 16.14 | 16.94 | 18.15 | 10.69          | 11.48 | 11.61 | 12.41 | 13.62 |
|                 | 4H   | 15.83            | 16.58 | 16.77 | 17.51 | 18.73 | 11.14          | 11.89 | 12.08 | 12.82 | 14.04 |
|                 | 6H   | 16.25            | 16.94 | 17.20 | 17.88 | 19.11 | 11.46          | 12.14 | 12.40 | 13.09 | 14.32 |
|                 | 8H   | 16.38            | 17.03 | 17.33 | 17.99 | 19.22 | 11.55          | 12.20 | 12.50 | 13.16 | 14.39 |
|                 | 12H  | 16.44            | 17.06 | 17.40 | 18.01 | 19.27 | 11.59          | 12.21 | 12.55 | 13.16 | 14.42 |
| 4H              | 2H   | 13.57            | 14.31 | 14.51 | 15.25 | 16.47 | 10.10          | 10.85 | 11.05 | 11.79 | 13.01 |
|                 | 3H   | 15.40            | 16.02 | 16.35 | 16.98 | 18.22 | 11.45          | 12.07 | 12.40 | 13.04 | 14.27 |
|                 | 4H   | 16.09            | 16.65 | 17.05 | 17.61 | 18.87 | 12.00          | 12.56 | 12.96 | 13.52 | 14.78 |
|                 | 6H   | 16.60            | 17.09 | 17.57 | 18.07 | 19.33 | 12.41          | 12.90 | 13.39 | 13.88 | 15.14 |
|                 | 8H   | 16.77            | 17.23 | 17.75 | 18.21 | 19.48 | 12.54          | 12.99 | 13.51 | 13.97 | 15.24 |
|                 | 12H  | 16.87            | 17.28 | 17.86 | 18.27 | 19.55 | 12.60          | 13.01 | 13.60 | 14.01 | 15.28 |
| 8H              | 4H   | 16.06            | 16.51 | 17.03 | 17.49 | 18.76 | 12.28          | 12.73 | 13.25 | 13.71 | 14.98 |
|                 | 6H   | 16.62            | 16.99 | 17.62 | 18.02 | 19.28 | 12.79          | 13.16 | 13.79 | 14.19 | 15.45 |
|                 | 8H   | 16.83            | 17.16 | 17.84 | 18.17 | 19.46 | 12.98          | 13.31 | 13.99 | 14.32 | 15.60 |
|                 | 12H  | 16.97            | 17.26 | 17.98 | 18.26 | 19.60 | 13.09          | 13.38 | 14.10 | 14.39 | 15.72 |
| 12H             | 4H   | 16.01            | 16.42 | 17.00 | 17.42 | 18.69 | 12.28          | 12.69 | 13.28 | 13.69 | 14.96 |
|                 | 6H   | 16.59            | 16.93 | 17.60 | 17.94 | 19.22 | 12.84          | 13.17 | 13.85 | 14.18 | 15.46 |
|                 | 8H   | 16.81            | 17.11 | 17.83 | 18.11 | 19.44 | 13.05          | 13.34 | 14.06 | 14.34 | 15.67 |