

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: P925288

Luminaire Tested: DFN2DIP-PN4F0-120D120US950-FLLFLL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P925288  
REPORT IS A COMBINATION OF REPORTS P899769 AND P896497  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-PN4F0-120D120US950-FLLFLL  
Description: 4 foot, Pentagon Define Geo, with Direct Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

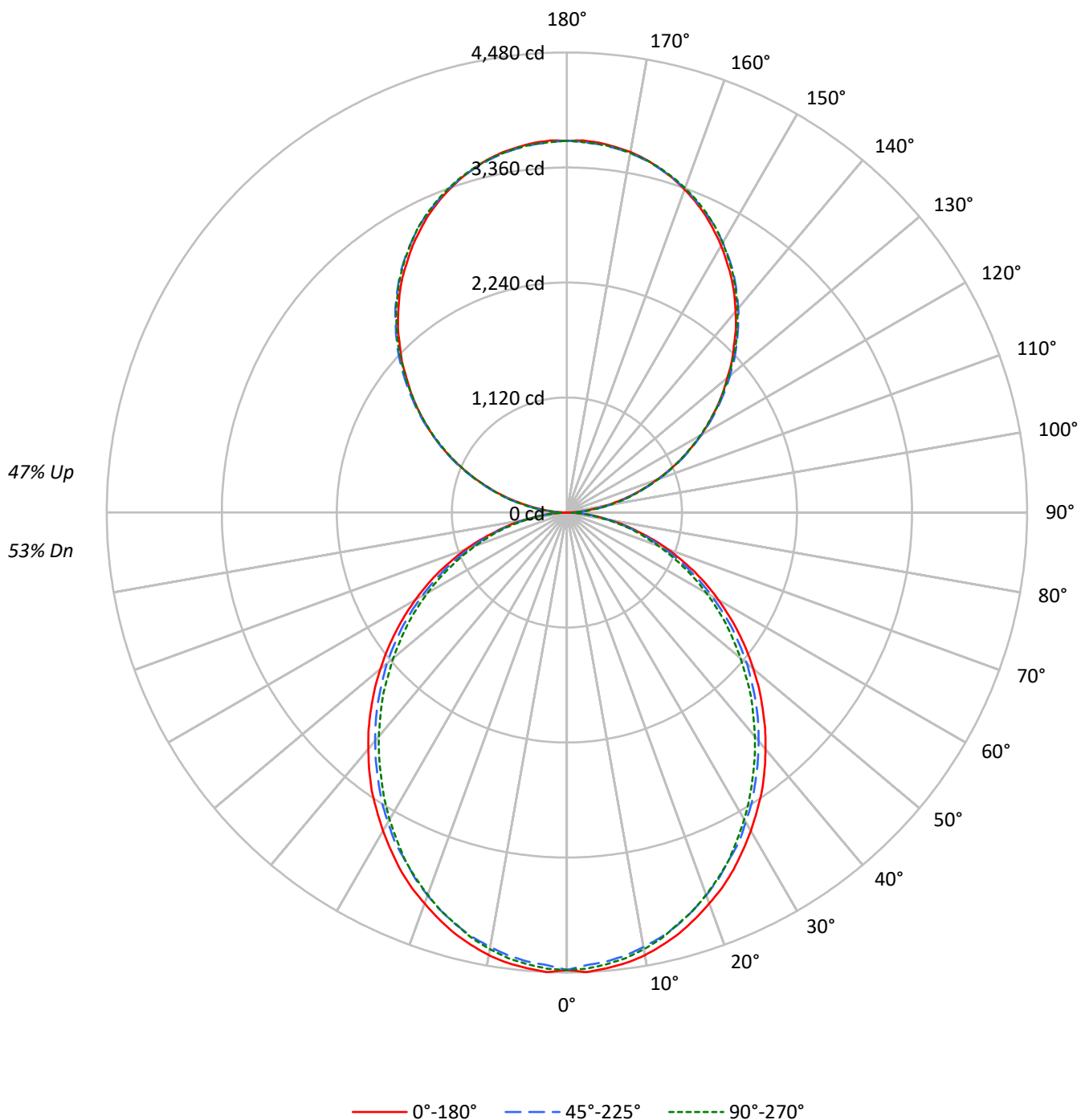
Lumens per Lamp: N/A  
Luminaire Lumens: 21465.0 lumens  
Efficiency: N/A  
Efficacy: 93.4 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29  
Luminous Opening: Rectangular w/ Sides (W: 3.74' x L: 3.94' x H: 0.1')  
CIE Type: General Diffuse

Input Watts (W): 229.8  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9781  
Total Harmonic Distortion (THDi): 0.075  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT

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CATALOG NUMBER: DFN2DIP-PN4F0-120D120US950-FLLFLL

### Luminous Intensity Polar Plot



TEST NUMBER: P925288

CATALOG NUMBER: DFN2DIP-PN4F0-120D120US950-FLLFL

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

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 3252 | 3252 | 3252 |
| 5°  | 3257 | 3207 | 3228 |
| 10° | 3230 | 3164 | 3185 |
| 15° | 3183 | 3112 | 3118 |
| 20° | 3119 | 3040 | 3048 |
| 25° | 3055 | 2954 | 2968 |
| 30° | 2975 | 2874 | 2866 |
| 35° | 2899 | 2780 | 2758 |
| 40° | 2806 | 2684 | 2655 |
| 45° | 2713 | 2588 | 2550 |
| 50° | 2611 | 2488 | 2428 |
| 55° | 2504 | 2372 | 2316 |
| 60° | 2384 | 2234 | 2188 |
| 65° | 2253 | 2091 | 2037 |
| 70° | 2085 | 1917 | 1874 |
| 75° | 1853 | 1709 | 1725 |
| 80° | 1574 | 1444 | 1438 |
| 85° | 1139 | 985  | 963  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 90°

Vertical Angle: 90°

Luminance: 2835 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 419.3   | 2.0       |
| 10°-20°   | 1179.6  | 5.5       |
| 20°-30°   | 1733.6  | 8.1       |
| 30°-40°   | 2013.5  | 9.4       |
| 40°-50°   | 2011.0  | 9.4       |
| 50°-60°   | 1753.5  | 8.2       |
| 60°-70°   | 1296.2  | 6.0       |
| 70°-80°   | 733.4   | 3.4       |
| 80°-90°   | 203.9   | 0.9       |
| 90°-100°  | 224.0   | 1.0       |
| 100°-110° | 711.8   | 3.3       |
| 110°-120° | 1218.2  | 5.7       |
| 120°-130° | 1602.1  | 7.5       |
| 130°-140° | 1798.3  | 8.4       |
| 140°-150° | 1763.5  | 8.2       |
| 150°-160° | 1479.3  | 6.9       |
| 160°-170° | 981.0   | 4.6       |
| 170°-180° | 342.9   | 1.6       |
| 0°-30°    | 3332.5  | 15.5      |
| 0°-40°    | 5345.9  | 24.9      |
| 0°-60°    | 9110.4  | 42.4      |
| 0°-90°    | 11343.8 | 52.8      |
| 90°-120°  | 2154.1  | 10.0      |
| 90°-150°  | 7318.0  | 34.1      |
| 90°-180°  | 10121.0 | 47.2      |
| 0°-180°   | 21465.0 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 4454 | 4454  | 4454 | 4454  | 4454 |      |
| 5°   | 4454 | 4438  | 4390 | 4424  | 4416 | 423  |
| 15°  | 4240 | 4215  | 4159 | 4176  | 4155 | 1194 |
| 25°  | 3838 | 3804  | 3731 | 3739  | 3731 | 1766 |
| 35°  | 3311 | 3268  | 3200 | 3174  | 3152 | 2068 |
| 45°  | 2694 | 2664  | 2600 | 2553  | 2536 | 2079 |
| 55°  | 2039 | 2013  | 1962 | 1910  | 1889 | 1823 |
| 65°  | 1375 | 1349  | 1306 | 1268  | 1247 | 1360 |
| 75°  | 719  | 711   | 689  | 664   | 673  | 768  |
| 85°  | 175  | 171   | 167  | 154   | 150  | 196  |
| 90°  | 3    | 39    | 107  | 100   | 104  | 21   |
| 95°  | 159  | 190   | 195  | 195   | 190  | 177  |
| 105° | 657  | 666   | 672  | 678   | 678  | 693  |
| 115° | 1222 | 1240  | 1234 | 1231  | 1222 | 1209 |
| 125° | 1778 | 1805  | 1797 | 1787  | 1784 | 1589 |
| 135° | 2300 | 2334  | 2340 | 2337  | 2328 | 1778 |
| 145° | 2792 | 2814  | 2831 | 2835  | 2823 | 1745 |
| 155° | 3193 | 3201  | 3211 | 3226  | 3217 | 1470 |
| 165° | 3473 | 3470  | 3470 | 3492  | 3476 | 980  |
| 175° | 3614 | 3605  | 3599 | 3620  | 3602 | 343  |
| 180° | 3620 | 3620  | 3620 | 3620  | 3620 |      |

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**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 4454.5 | 4454.5 | 4454.5 | 4454.5 | 4454.5 |
| 2.5°   | 4480.4 | 4459.0 | 4411.8 | 4454.5 | 4446.3 |
| 5°     | 4454.5 | 4437.6 | 4390.4 | 4424.5 | 4416.3 |
| 7.5°   | 4424.5 | 4399.0 | 4351.8 | 4386.3 | 4377.7 |
| 10°    | 4377.7 | 4347.7 | 4296.3 | 4330.4 | 4317.7 |
| 12.5°  | 4313.1 | 4287.7 | 4236.3 | 4257.7 | 4249.0 |
| 15°    | 4240.4 | 4215.0 | 4159.1 | 4176.3 | 4155.0 |
| 17.5°  | 4150.5 | 4125.0 | 4069.1 | 4090.5 | 4069.1 |
| 20°    | 4051.8 | 4026.4 | 3966.4 | 3979.1 | 3962.3 |
| 22.5°  | 3953.7 | 3915.0 | 3859.1 | 3859.1 | 3850.5 |
| 25°    | 3837.8 | 3803.7 | 3731.0 | 3739.2 | 3731.0 |
| 27.5°  | 3709.2 | 3679.2 | 3623.8 | 3611.0 | 3589.7 |
| 30°    | 3581.0 | 3546.5 | 3482.4 | 3469.7 | 3452.4 |
| 32.5°  | 3443.7 | 3418.4 | 3349.7 | 3323.8 | 3306.6 |
| 35°    | 3311.0 | 3268.4 | 3199.7 | 3173.9 | 3152.5 |
| 37.5°  | 3161.1 | 3122.5 | 3053.8 | 3023.9 | 3002.5 |
| 40°    | 3007.1 | 2972.6 | 2903.9 | 2865.7 | 2848.5 |
| 42.5°  | 2857.1 | 2822.6 | 2754.4 | 2711.3 | 2685.8 |
| 45°    | 2694.4 | 2664.4 | 2599.8 | 2553.1 | 2535.8 |
| 47.5°  | 2535.8 | 2505.8 | 2437.2 | 2390.0 | 2364.5 |
| 50°    | 2368.6 | 2347.2 | 2287.2 | 2227.2 | 2205.8 |
| 52.5°  | 2205.8 | 2175.9 | 2120.5 | 2073.1 | 2043.2 |
| 55°    | 2039.1 | 2013.2 | 1961.8 | 1910.5 | 1889.1 |
| 57.5°  | 1871.8 | 1850.5 | 1794.6 | 1743.2 | 1726.0 |
| 60°    | 1704.6 | 1687.8 | 1627.8 | 1580.6 | 1567.8 |
| 62.5°  | 1542.0 | 1511.9 | 1469.3 | 1426.5 | 1409.2 |
| 65°    | 1375.2 | 1349.2 | 1306.5 | 1267.9 | 1246.6 |
| 67.5°  | 1203.9 | 1182.0 | 1143.8 | 1113.9 | 1096.6 |
| 70°    | 1045.2 | 1027.9 | 989.3  | 959.3  | 942.6  |
| 72.5°  | 882.5  | 865.3  | 843.9  | 814.0  | 801.2  |
| 75°    | 719.4  | 711.2  | 689.4  | 664.0  | 672.6  |
| 77.5°  | 573.9  | 556.7  | 548.1  | 535.3  | 522.6  |
| 80°    | 428.5  | 424.0  | 415.4  | 402.7  | 394.0  |
| 82.5°  | 291.3  | 291.3  | 287.2  | 270.0  | 270.0  |
| 85°    | 175.4  | 171.3  | 167.2  | 154.1  | 150.0  |
| 87.5°  | 77.3   | 68.6   | 60.0   | 47.2   | 42.7   |
| 90°    | 3.2    | 39.3   | 106.9  | 100.5  | 103.7  |
| 92.5°  | 67.6   | 91.7   | 94.9   | 98.3   | 98.3   |
| 95°    | 159.3  | 189.9  | 195.4  | 195.4  | 189.9  |
| 97.5°  | 265.2  | 293.6  | 305.7  | 305.7  | 305.7  |
| 100°   | 387.5  | 412.6  | 421.3  | 421.3  | 418.0  |
| 102.5° | 516.3  | 534.8  | 546.8  | 550.2  | 546.8  |
| 105°   | 657.1  | 665.8  | 672.4  | 677.8  | 677.8  |
| 107.5° | 796.8  | 809.9  | 809.9  | 812.0  | 796.8  |
| 110°   | 932.2  | 949.6  | 949.6  | 949.6  | 940.9  |

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**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 1078.4 | 1097.0 | 1093.7 | 1085.0 | 1078.4 |
| 115°   | 1222.5 | 1240.0 | 1234.5 | 1231.2 | 1222.5 |
| 117.5° | 1365.5 | 1389.5 | 1374.2 | 1365.5 | 1356.8 |
| 120°   | 1509.6 | 1533.6 | 1509.6 | 1509.6 | 1499.8 |
| 122.5° | 1640.6 | 1671.1 | 1655.9 | 1647.1 | 1640.6 |
| 125°   | 1778.1 | 1805.3 | 1796.7 | 1786.8 | 1783.5 |
| 127.5° | 1912.4 | 1946.2 | 1934.1 | 1921.1 | 1912.4 |
| 130°   | 2037.8 | 2077.1 | 2071.7 | 2065.1 | 2053.1 |
| 132.5° | 2178.6 | 2209.3 | 2211.4 | 2196.1 | 2187.4 |
| 135°   | 2299.8 | 2333.7 | 2340.3 | 2336.9 | 2328.2 |
| 137.5° | 2435.2 | 2462.5 | 2467.9 | 2465.7 | 2452.6 |
| 140°   | 2554.1 | 2581.4 | 2596.7 | 2596.7 | 2584.7 |
| 142.5° | 2676.4 | 2703.7 | 2712.4 | 2715.7 | 2703.7 |
| 145°   | 2792.1 | 2813.9 | 2831.4 | 2834.7 | 2822.7 |
| 147.5° | 2895.8 | 2923.1 | 2936.2 | 2941.7 | 2929.6 |
| 150°   | 3002.8 | 3021.3 | 3033.3 | 3043.2 | 3033.3 |
| 152.5° | 3097.7 | 3116.2 | 3131.6 | 3143.6 | 3131.6 |
| 155°   | 3192.7 | 3201.4 | 3211.3 | 3226.5 | 3216.7 |
| 157.5° | 3274.6 | 3281.1 | 3286.5 | 3308.4 | 3293.1 |
| 160°   | 3347.7 | 3354.3 | 3357.5 | 3376.1 | 3362.9 |
| 162.5° | 3415.3 | 3415.3 | 3418.7 | 3439.4 | 3424.1 |
| 165°   | 3473.2 | 3470.0 | 3470.0 | 3491.7 | 3476.5 |
| 167.5° | 3525.6 | 3515.8 | 3515.8 | 3537.6 | 3522.4 |
| 170°   | 3564.9 | 3556.1 | 3552.9 | 3574.7 | 3556.1 |
| 172.5° | 3592.2 | 3583.4 | 3580.2 | 3602.0 | 3583.4 |
| 175°   | 3614.0 | 3605.3 | 3598.8 | 3620.5 | 3602.0 |
| 177.5° | 3626.1 | 3617.3 | 3610.7 | 3629.3 | 3610.7 |
| 180°   | 3620.5 | 3620.5 | 3620.5 | 3620.5 | 3620.5 |

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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 | 11.63            | 12.52 | 12.57 | 13.47 | 14.70 | 11.19          | 12.08 | 12.13 | 13.03 | 14.26 |
|                 | 3H   | 13.30            | 14.10 | 14.24 | 15.05 | 16.31 | 12.81          | 13.61 | 13.76 | 14.57 | 15.82 |
|                 | 4H   | 13.89            | 14.64 | 14.85 | 15.61 | 16.87 | 13.40          | 14.16 | 14.36 | 15.12 | 16.38 |
|                 | 6H   | 14.29            | 14.99 | 15.26 | 15.96 | 17.23 | 13.80          | 14.50 | 14.77 | 15.46 | 16.74 |
|                 | 8H   | 14.40            | 15.06 | 15.38 | 16.05 | 17.32 | 13.91          | 14.57 | 14.88 | 15.55 | 16.83 |
|                 | 12H  | 14.45            | 15.08 | 15.43 | 16.06 | 17.36 | 13.95          | 14.58 | 14.93 | 15.56 | 16.86 |
| 4H              | 2H   | 12.10            | 12.85 | 13.06 | 13.82 | 15.08 | 11.75          | 12.50 | 12.71 | 13.46 | 14.73 |
|                 | 3H   | 13.97            | 14.60 | 14.94 | 15.59 | 16.87 | 13.57          | 14.20 | 14.54 | 15.19 | 16.47 |
|                 | 4H   | 14.69            | 15.26 | 15.67 | 16.25 | 17.55 | 14.27          | 14.85 | 15.25 | 15.83 | 17.13 |
|                 | 6H   | 15.21            | 15.70 | 16.20 | 16.71 | 18.01 | 14.78          | 15.28 | 15.78 | 16.29 | 17.59 |
|                 | 8H   | 15.36            | 15.82 | 16.36 | 16.83 | 18.14 | 14.93          | 15.39 | 15.93 | 16.40 | 17.71 |
|                 | 12H  | 15.43            | 15.85 | 16.45 | 16.87 | 18.19 | 14.99          | 15.41 | 16.01 | 16.43 | 17.75 |
| 8H              | 4H   | 14.89            | 15.35 | 15.88 | 16.35 | 17.67 | 14.52          | 14.98 | 15.51 | 15.98 | 17.30 |
|                 | 6H   | 15.52            | 15.91 | 16.54 | 16.95 | 18.26 | 15.15          | 15.53 | 16.17 | 16.57 | 17.89 |
|                 | 8H   | 15.75            | 16.08 | 16.77 | 17.11 | 18.44 | 15.36          | 15.70 | 16.39 | 16.73 | 18.06 |
|                 | 12H  | 15.88            | 16.18 | 16.91 | 17.20 | 18.58 | 15.48          | 15.78 | 16.51 | 16.80 | 18.18 |
| 12H             | 4H   | 14.87            | 15.29 | 15.89 | 16.31 | 17.63 | 14.51          | 14.93 | 15.53 | 15.95 | 17.27 |
|                 | 6H   | 15.55            | 15.89 | 16.58 | 16.92 | 18.25 | 15.19          | 15.53 | 16.22 | 16.56 | 17.89 |
|                 | 8H   | 15.80            | 16.10 | 16.83 | 17.12 | 18.50 | 15.43          | 15.72 | 16.46 | 16.75 | 18.12 |

END OF REPORT