

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: P912363

Luminaire Tested: DFN2DIP-SQ4F0-120D120US850-RLLONL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P912363  
REPORT IS A COMBINATION OF REPORTS P901700 AND P898471  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-SQ4F0-120D120US850-RLLONL  
Description: 4 foot, Square Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Open No Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

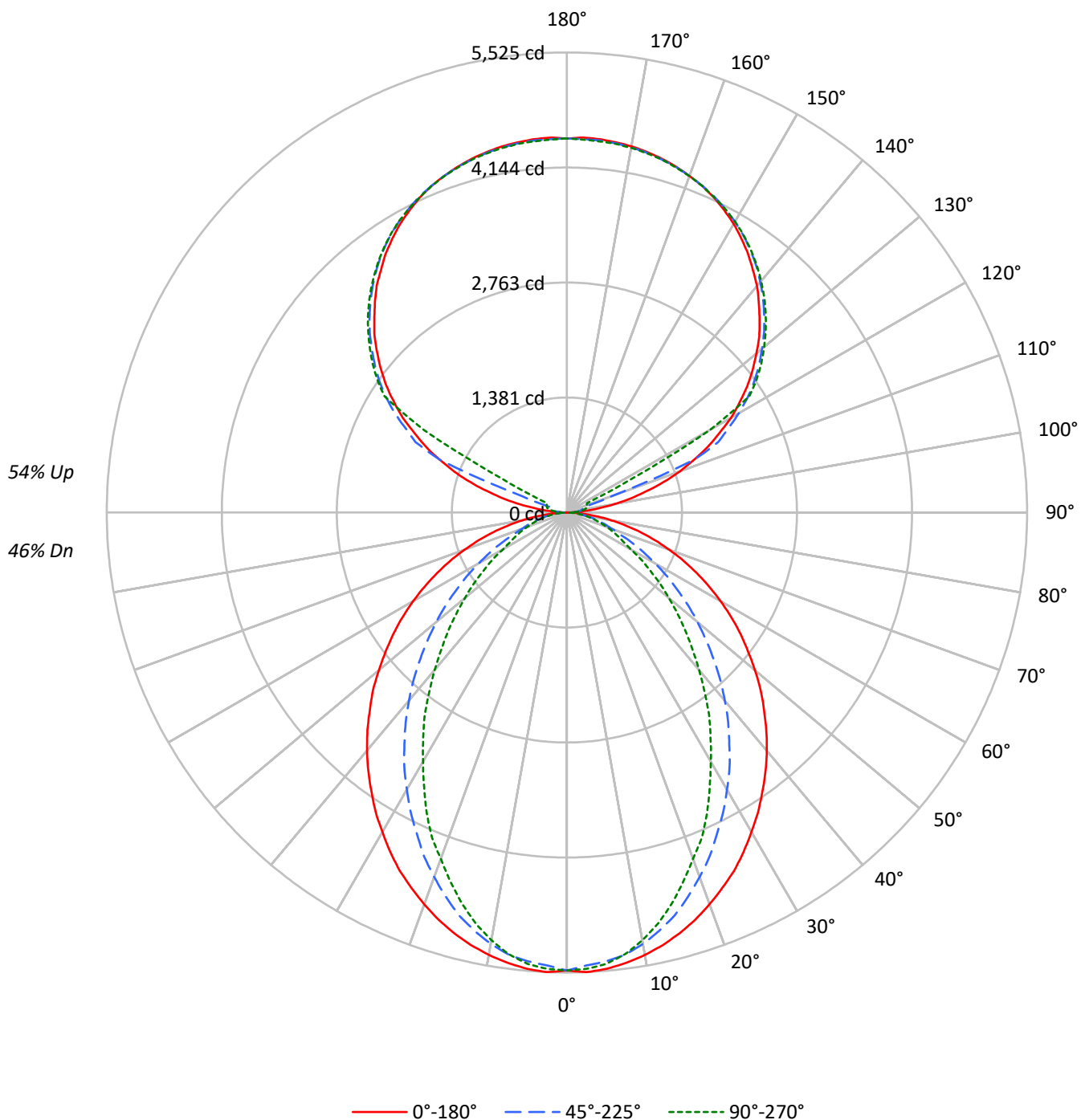
Lumens per Lamp: N/A  
Luminaire Lumens: 24486.7 lumens  
Efficiency: N/A  
Efficacy: 117.9 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16  
Luminous Opening: Rectangular w/ Sides (W: 3.92' x L: 3.92' x H: 0.1')  
CIE Type: General Diffuse

Input Watts (W): 207.7  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9933  
Total Harmonic Distortion (THDi): 0.066  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT

TEST NUMBER: P912363

CATALOG NUMBER: DFN2DIP-SQ4F0-120D120US850-RLLONL

### Luminous Intensity Polar Plot



TEST NUMBER: P912363

CATALOG NUMBER: DFN2DIP-SQ4F0-120D120US850-RLLONL

**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   | 106 | 106 | 106 | 106 | 98 | 98 | 98 | 98 | 81 | 81 | 81 | 66 | 66 | 66 | 53 | 53 | 53 |
| 1   | 97  | 93  | 90  | 86  | 89 | 86 | 83 | 80 | 72 | 70 | 68 | 59 | 58 | 56 | 47 | 46 | 45 |
| 2   | 89  | 82  | 76  | 71  | 82 | 76 | 70 | 66 | 63 | 60 | 57 | 52 | 50 | 48 | 42 | 40 | 39 |
| 3   | 81  | 72  | 65  | 60  | 75 | 67 | 61 | 56 | 56 | 52 | 48 | 47 | 43 | 41 | 38 | 35 | 34 |
| 4   | 75  | 64  | 57  | 51  | 68 | 60 | 53 | 48 | 50 | 45 | 41 | 42 | 38 | 35 | 34 | 31 | 29 |
| 5   | 69  | 58  | 50  | 44  | 63 | 53 | 46 | 41 | 45 | 40 | 36 | 38 | 34 | 31 | 31 | 28 | 26 |
| 6   | 63  | 52  | 44  | 38  | 58 | 48 | 41 | 36 | 41 | 36 | 32 | 34 | 30 | 27 | 28 | 25 | 23 |
| 7   | 59  | 47  | 39  | 34  | 54 | 44 | 37 | 32 | 37 | 32 | 28 | 31 | 27 | 24 | 26 | 23 | 21 |
| 8   | 55  | 43  | 35  | 30  | 50 | 40 | 33 | 28 | 34 | 29 | 25 | 29 | 25 | 22 | 24 | 21 | 19 |
| 9   | 51  | 39  | 32  | 27  | 47 | 36 | 30 | 25 | 31 | 26 | 22 | 27 | 23 | 20 | 22 | 19 | 17 |
| 10  | 48  | 36  | 29  | 24  | 44 | 33 | 27 | 23 | 29 | 24 | 20 | 25 | 21 | 18 | 20 | 18 | 15 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 3859 | 3859 | 3859 |
| 5°  | 3865 | 3799 | 3824 |
| 10° | 3827 | 3725 | 3700 |
| 15° | 3774 | 3603 | 3509 |
| 20° | 3705 | 3434 | 3274 |
| 25° | 3633 | 3244 | 3047 |
| 30° | 3537 | 3050 | 2758 |
| 35° | 3443 | 2841 | 2505 |
| 40° | 3348 | 2624 | 2214 |
| 45° | 3237 | 2384 | 1950 |
| 50° | 3122 | 2141 | 1693 |
| 55° | 3002 | 1882 | 1446 |
| 60° | 2863 | 1610 | 1191 |
| 65° | 2703 | 1335 | 1073 |
| 70° | 2510 | 1077 | 973  |
| 75° | 2267 | 951  | 887  |
| 80° | 1915 | 801  | 773  |
| 85° | 1333 | 539  | 589  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 3237 cd/sqm

TEST NUMBER: P912363

CATALOG NUMBER: DFN2DIP-SQ4F0-120D120US850-RLLONL

**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 515.5   | 2.1       |
| 10°-20°   | 1415.1  | 5.8       |
| 20°-30°   | 1986.8  | 8.1       |
| 30°-40°   | 2165.7  | 8.8       |
| 40°-50°   | 1990.5  | 8.1       |
| 50°-60°   | 1563.2  | 6.4       |
| 60°-70°   | 1017.5  | 4.2       |
| 70°-80°   | 523.8   | 2.1       |
| 80°-90°   | 141.6   | 0.6       |
| 90°-100°  | 148.1   | 0.6       |
| 100°-110° | 552.1   | 2.3       |
| 110°-120° | 1464.2  | 6.0       |
| 120°-130° | 2428.5  | 9.9       |
| 130°-140° | 2579.6  | 10.5      |
| 140°-150° | 2397.5  | 9.8       |
| 150°-160° | 1927.5  | 7.9       |
| 160°-170° | 1242.0  | 5.1       |
| 170°-180° | 427.5   | 1.7       |
| 0°-30°    | 3917.3  | 16.0      |
| 0°-40°    | 6083.0  | 24.8      |
| 0°-60°    | 9636.8  | 39.4      |
| 0°-90°    | 11319.7 | 46.2      |
| 90°-120°  | 2164.4  | 8.8       |
| 90°-150°  | 9570.0  | 39.1      |
| 90°-180°  | 13167.0 | 53.8      |
| 0°-180°   | 24486.7 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 5500 | 5500  | 5500 | 5500  | 5500 |      |
| 5°   | 5500 | 5475  | 5410 | 5455  | 5440 | 522  |
| 15°  | 5231 | 5176  | 5008 | 4913  | 4863 | 1474 |
| 25°  | 4749 | 4589  | 4261 | 4057  | 3982 | 2184 |
| 35°  | 4092 | 3838  | 3400 | 3086  | 2976 | 2561 |
| 45°  | 3345 | 3011  | 2489 | 2135  | 2016 | 2583 |
| 55°  | 2543 | 2155  | 1618 | 1319  | 1225 | 2273 |
| 65°  | 1717 | 1314  | 866  | 697   | 682  | 1703 |
| 75°  | 916  | 567   | 398  | 363   | 358  | 969  |
| 85°  | 214  | 109   | 94   | 94    | 94   | 246  |
| 90°  | 3    | 39    | 65   | 81    | 88   | 23   |
| 95°  | 211  | 104   | 126  | 143   | 140  | 250  |
| 105° | 988  | 1086  | 198  | 234   | 247  | 1056 |
| 115° | 1869 | 1924  | 2005 | 500   | 267  | 1840 |
| 125° | 2642 | 2684  | 2746 | 2769  | 2779 | 2356 |
| 135° | 3269 | 3322  | 3350 | 3383  | 3377 | 2526 |
| 145° | 3793 | 3789  | 3844 | 3867  | 3851 | 2372 |
| 155° | 4176 | 4147  | 4186 | 4205  | 4180 | 1924 |
| 165° | 4400 | 4381  | 4390 | 4413  | 4390 | 1243 |
| 175° | 4501 | 4478  | 4485 | 4508  | 4475 | 428  |
| 180° | 4491 | 4491  | 4491 | 4491  | 4491 |      |

TEST NUMBER: P912363

CATALOG NUMBER: DFN2DIP-SQ4F0-120D120US850-RLLONL

**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 5500.2 | 5500.2 | 5500.2 | 5500.2 | 5500.2 |
| 2.5°   | 5525.0 | 5500.2 | 5445.3 | 5495.4 | 5485.3 |
| 5°     | 5500.2 | 5475.4 | 5410.4 | 5455.3 | 5440.5 |
| 7.5°   | 5455.3 | 5425.7 | 5356.0 | 5375.5 | 5350.7 |
| 10°    | 5395.6 | 5360.8 | 5261.4 | 5246.1 | 5216.6 |
| 12.5°  | 5321.1 | 5276.3 | 5141.5 | 5112.0 | 5057.2 |
| 15°    | 5231.4 | 5176.5 | 5007.5 | 4912.9 | 4863.3 |
| 17.5°  | 5126.8 | 5047.1 | 4837.9 | 4728.7 | 4648.9 |
| 20°    | 5007.5 | 4907.7 | 4658.9 | 4534.8 | 4424.9 |
| 22.5°  | 4878.0 | 4763.5 | 4474.6 | 4305.6 | 4231.2 |
| 25°    | 4748.7 | 4589.2 | 4260.7 | 4056.8 | 3981.9 |
| 27.5°  | 4594.5 | 4424.9 | 4061.6 | 3827.7 | 3713.0 |
| 30°    | 4430.2 | 4240.7 | 3842.5 | 3588.9 | 3454.3 |
| 32.5°  | 4270.8 | 4041.5 | 3633.9 | 3335.0 | 3210.3 |
| 35°    | 4091.8 | 3837.7 | 3399.9 | 3086.2 | 2976.3 |
| 37.5°  | 3917.4 | 3643.4 | 3180.7 | 2836.9 | 2712.8 |
| 40°    | 3733.1 | 3434.8 | 2951.6 | 2598.3 | 2468.9 |
| 42.5°  | 3544.0 | 3225.6 | 2722.9 | 2354.3 | 2230.2 |
| 45°    | 3345.0 | 3011.3 | 2488.9 | 2135.2 | 2015.7 |
| 47.5°  | 3155.9 | 2802.7 | 2265.0 | 1911.3 | 1801.9 |
| 50°    | 2946.8 | 2593.5 | 2045.9 | 1702.1 | 1598.1 |
| 52.5°  | 2742.4 | 2369.0 | 1836.7 | 1508.2 | 1413.8 |
| 55°    | 2543.4 | 2155.2 | 1617.6 | 1319.2 | 1224.7 |
| 57.5°  | 2339.4 | 1941.3 | 1423.7 | 1144.9 | 1065.2 |
| 60°    | 2130.4 | 1732.1 | 1219.3 | 965.9  | 886.2  |
| 62.5°  | 1926.6 | 1528.3 | 1045.1 | 806.5  | 766.8  |
| 65°    | 1717.4 | 1313.9 | 866.1  | 697.1  | 681.8  |
| 67.5°  | 1518.3 | 1114.8 | 697.1  | 612.1  | 597.3  |
| 70°    | 1309.2 | 921.0  | 577.2  | 527.6  | 507.5  |
| 72.5°  | 1110.1 | 741.5  | 482.6  | 443.0  | 433.1  |
| 75°    | 915.7  | 567.1  | 398.2  | 363.3  | 358.5  |
| 77.5°  | 722.0  | 402.9  | 313.7  | 293.7  | 283.6  |
| 80°    | 542.4  | 288.9  | 238.7  | 219.1  | 219.1  |
| 82.5°  | 378.2  | 194.3  | 164.2  | 154.2  | 154.2  |
| 85°    | 213.9  | 109.3  | 94.5   | 94.5   | 94.5   |
| 87.5°  | 79.7   | 39.6   | 39.6   | 34.8   | 34.8   |
| 90°    | 3.1    | 38.9   | 64.9   | 81.4   | 87.6   |
| 92.5°  | 81.4   | 68.3   | 78.0   | 84.5   | 87.6   |
| 95°    | 211.0  | 103.8  | 126.5  | 143.2  | 139.7  |
| 97.5°  | 380.2  | 113.9  | 165.6  | 175.6  | 178.7  |
| 100°   | 575.3  | 130.1  | 185.2  | 211.0  | 217.7  |
| 102.5° | 789.6  | 783.4  | 191.7  | 227.3  | 237.3  |
| 105°   | 987.9  | 1085.6 | 198.4  | 233.9  | 247.0  |
| 107.5° | 1218.7 | 1299.7 | 204.9  | 240.4  | 253.5  |
| 110°   | 1439.8 | 1507.8 | 568.8  | 243.9  | 256.6  |

TEST NUMBER: P912363

CATALOG NUMBER: DFN2DIP-SQ4F0-120D120US850-RLLONL

**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 1647.9 | 1706.1 | 1651.0 | 250.1  | 260.1  |
| 115°   | 1868.6 | 1923.8 | 2005.2 | 500.5  | 266.7  |
| 117.5° | 2060.4 | 2125.3 | 2180.8 | 1715.7 | 864.5  |
| 120°   | 2275.0 | 2323.6 | 2382.2 | 2421.3 | 1982.4 |
| 122.5° | 2456.8 | 2508.9 | 2574.1 | 2593.4 | 2596.8 |
| 125°   | 2642.0 | 2684.4 | 2746.2 | 2769.0 | 2778.6 |
| 127.5° | 2811.0 | 2856.6 | 2905.6 | 2938.0 | 2941.1 |
| 130°   | 2970.3 | 3022.5 | 3058.0 | 3093.9 | 3090.8 |
| 132.5° | 3132.8 | 3175.3 | 3210.8 | 3240.2 | 3237.1 |
| 135°   | 3269.4 | 3321.6 | 3350.5 | 3383.3 | 3376.8 |
| 137.5° | 3412.3 | 3451.2 | 3484.0 | 3516.4 | 3506.8 |
| 140°   | 3552.0 | 3578.2 | 3613.7 | 3643.1 | 3626.9 |
| 142.5° | 3669.2 | 3692.1 | 3734.1 | 3760.0 | 3743.8 |
| 145°   | 3792.8 | 3789.3 | 3844.5 | 3867.3 | 3851.0 |
| 147.5° | 3899.7 | 3890.0 | 3945.3 | 3961.5 | 3948.7 |
| 150°   | 4003.8 | 3981.1 | 4033.2 | 4052.5 | 4036.3 |
| 152.5° | 4091.4 | 4065.6 | 4114.3 | 4133.9 | 4111.2 |
| 155°   | 4175.9 | 4147.0 | 4186.0 | 4205.3 | 4179.5 |
| 157.5° | 4244.3 | 4218.4 | 4247.8 | 4270.5 | 4244.3 |
| 160°   | 4302.9 | 4283.3 | 4302.9 | 4322.2 | 4299.5 |
| 162.5° | 4354.7 | 4335.4 | 4351.6 | 4374.3 | 4345.1 |
| 165°   | 4400.2 | 4380.9 | 4390.5 | 4413.4 | 4390.5 |
| 167.5° | 4436.1 | 4416.4 | 4426.5 | 4449.2 | 4419.9 |
| 170°   | 4465.4 | 4445.8 | 4452.3 | 4475.0 | 4445.8 |
| 172.5° | 4484.7 | 4465.4 | 4472.0 | 4494.8 | 4465.4 |
| 175°   | 4500.9 | 4478.1 | 4484.7 | 4507.5 | 4475.0 |
| 177.5° | 4507.5 | 4484.7 | 4488.2 | 4511.0 | 4481.7 |
| 180°   | 4491.3 | 4491.3 | 4491.3 | 4491.3 | 4491.3 |

TEST NUMBER: P912363

CATALOG NUMBER: DFN2DIP-SQ4F0-120D120US850-RLONL

**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 | 11.49            | 12.29 | 12.48 | 13.29 | 14.62 | 7.45           | 8.25  | 8.44  | 9.25  | 10.58 |
|                 | 3H   | 13.17            | 13.88 | 14.17 | 14.90 | 16.24 | 8.64           | 9.35  | 9.64  | 10.36 | 11.71 |
|                 | 4H   | 13.78            | 14.46 | 14.80 | 15.47 | 16.83 | 9.09           | 9.76  | 10.10 | 10.78 | 12.13 |
|                 | 6H   | 14.20            | 14.83 | 15.23 | 15.84 | 17.21 | 9.41           | 10.03 | 10.43 | 11.05 | 12.42 |
|                 | 8H   | 14.33            | 14.92 | 15.36 | 15.96 | 17.32 | 9.50           | 10.09 | 10.53 | 11.12 | 12.49 |
|                 | 12H  | 14.39            | 14.96 | 15.43 | 15.98 | 17.37 | 9.54           | 10.10 | 10.58 | 11.13 | 12.52 |
| 4H              | 2H   | 11.50            | 12.18 | 12.53 | 13.19 | 14.55 | 8.04           | 8.72  | 9.07  | 9.73  | 11.09 |
|                 | 3H   | 13.33            | 13.90 | 14.37 | 14.94 | 16.31 | 9.39           | 9.95  | 10.43 | 11.00 | 12.37 |
|                 | 4H   | 14.03            | 14.54 | 15.07 | 15.58 | 16.97 | 9.94           | 10.45 | 10.98 | 11.49 | 12.88 |
|                 | 6H   | 14.55            | 14.99 | 15.60 | 16.05 | 17.43 | 10.36          | 10.80 | 11.41 | 11.86 | 13.25 |
|                 | 8H   | 14.72            | 15.14 | 15.77 | 16.19 | 17.59 | 10.49          | 10.90 | 11.54 | 11.95 | 13.35 |
|                 | 12H  | 14.82            | 15.19 | 15.89 | 16.26 | 17.67 | 10.55          | 10.92 | 11.62 | 11.99 | 13.40 |
| 8H              | 4H   | 13.99            | 14.41 | 15.05 | 15.46 | 16.86 | 10.22          | 10.63 | 11.27 | 11.68 | 13.09 |
|                 | 6H   | 14.56            | 14.90 | 15.64 | 16.00 | 17.40 | 10.74          | 11.08 | 11.81 | 12.17 | 13.57 |
|                 | 8H   | 14.78            | 15.08 | 15.87 | 16.16 | 17.58 | 10.93          | 11.23 | 12.01 | 12.31 | 13.73 |
|                 | 12H  | 14.92            | 15.19 | 16.01 | 16.26 | 17.72 | 11.05          | 11.31 | 12.13 | 12.38 | 13.84 |
| 12H             | 4H   | 13.95            | 14.32 | 15.01 | 15.38 | 16.79 | 10.22          | 10.60 | 11.29 | 11.66 | 13.07 |
|                 | 6H   | 14.54            | 14.84 | 15.62 | 15.92 | 17.33 | 10.79          | 11.09 | 11.87 | 12.16 | 13.58 |
|                 | 8H   | 14.76            | 15.03 | 15.85 | 16.10 | 17.56 | 11.00          | 11.26 | 12.08 | 12.33 | 13.79 |

END OF REPORT