

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: P926611

Luminaire Tested: DFN2DIP-TR4F0-100D110US950-FLLONL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P926611  
REPORT IS A COMBINATION OF REPORTS P902027 AND P898849  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-TR4F0-100D110US950-FLLONL  
Description: 4 foot, Triangle Define Geo, with Direct Frosted Lens, Indirect Open No Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

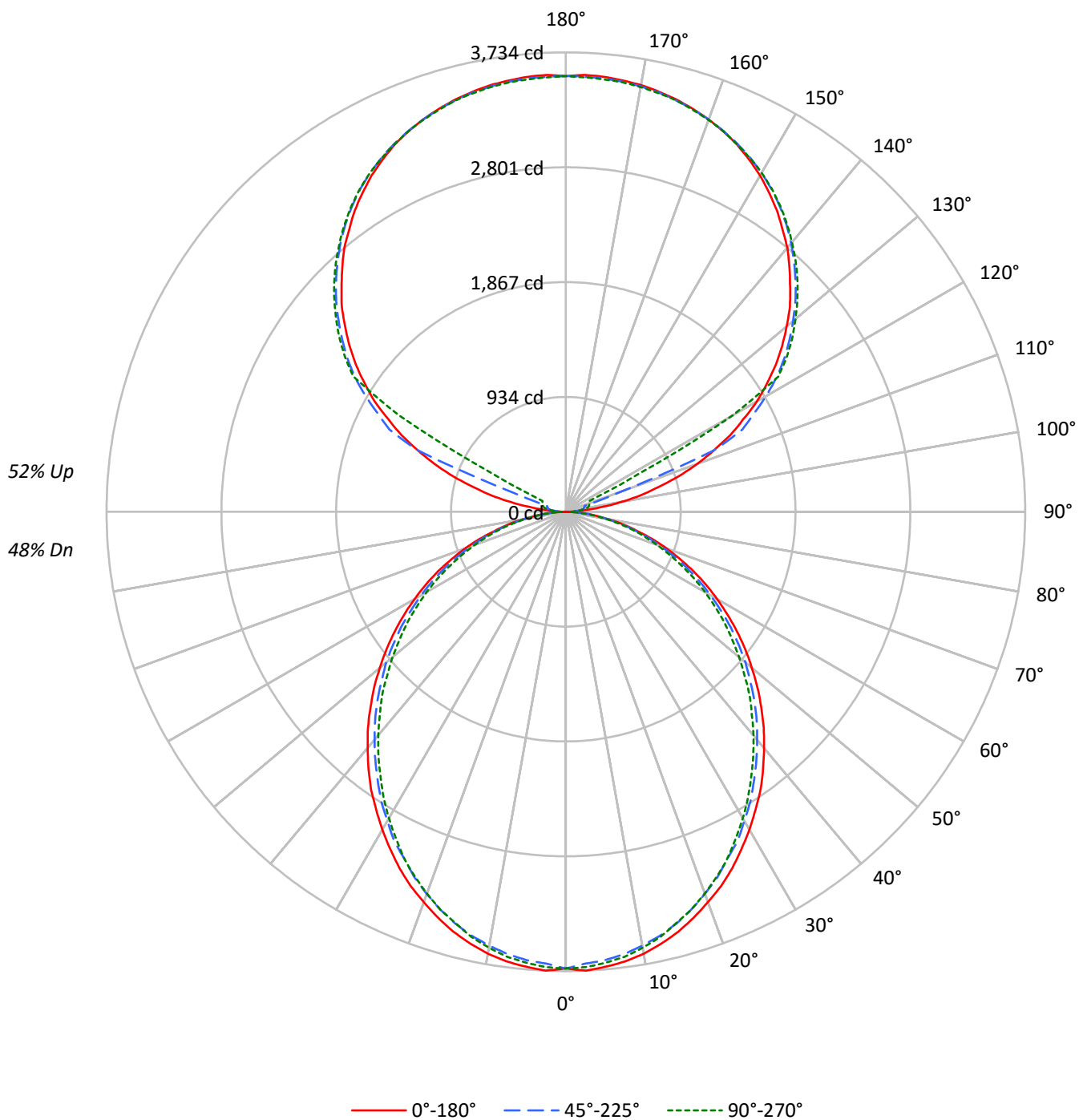
Lumens per Lamp: N/A  
Luminaire Lumens: 19833.7 lumens  
Efficiency: N/A  
Efficacy: 106.7 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29  
Luminous Opening: Rectangular w/ Sides (W: 3.43' x L: 3.96' x H: 0.1')  
CIE Type: General Diffuse

Input Watts (W): 185.8  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9972  
Total Harmonic Distortion (THDi): 0.128  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT

TEST NUMBER: P926611

CATALOG NUMBER: DFN2DIP-TR4F0-100D110US950-FLLONL

### Luminous Intensity Polar Plot



TEST NUMBER: P926611

CATALOG NUMBER: DFN2DIP-TR4F0-100D110US950-FLLONL

**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   | 107 | 107 | 107 | 107 | 98 | 98 | 98 | 98 | 82 | 82 | 82 | 67 | 67 | 67 | 54 | 54 | 54 |
| 1   | 97  | 93  | 89  | 86  | 89 | 86 | 82 | 79 | 72 | 70 | 67 | 59 | 58 | 56 | 48 | 47 | 46 |
| 2   | 89  | 81  | 75  | 70  | 81 | 75 | 70 | 65 | 63 | 59 | 56 | 52 | 49 | 47 | 42 | 40 | 38 |
| 3   | 81  | 71  | 64  | 58  | 74 | 66 | 60 | 54 | 56 | 51 | 47 | 46 | 43 | 40 | 37 | 35 | 33 |
| 4   | 74  | 63  | 55  | 49  | 68 | 58 | 51 | 46 | 49 | 44 | 40 | 41 | 37 | 34 | 33 | 30 | 28 |
| 5   | 68  | 56  | 48  | 42  | 62 | 52 | 45 | 40 | 44 | 39 | 34 | 37 | 33 | 29 | 30 | 27 | 25 |
| 6   | 62  | 50  | 42  | 37  | 57 | 47 | 40 | 34 | 40 | 34 | 30 | 33 | 29 | 26 | 27 | 24 | 22 |
| 7   | 58  | 46  | 38  | 32  | 53 | 42 | 35 | 30 | 36 | 30 | 26 | 30 | 26 | 23 | 25 | 22 | 19 |
| 8   | 54  | 41  | 34  | 28  | 49 | 38 | 31 | 27 | 33 | 27 | 23 | 28 | 23 | 20 | 23 | 20 | 17 |
| 9   | 50  | 38  | 30  | 25  | 46 | 35 | 28 | 24 | 30 | 25 | 21 | 25 | 21 | 18 | 21 | 18 | 16 |
| 10  | 47  | 35  | 27  | 23  | 43 | 32 | 26 | 21 | 28 | 23 | 19 | 24 | 19 | 17 | 20 | 16 | 14 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 2949 | 2949 | 2949 |
| 5°  | 2954 | 2908 | 2927 |
| 10° | 2930 | 2869 | 2888 |
| 15° | 2887 | 2821 | 2826 |
| 20° | 2829 | 2756 | 2762 |
| 25° | 2771 | 2677 | 2689 |
| 30° | 2698 | 2604 | 2595 |
| 35° | 2629 | 2518 | 2497 |
| 40° | 2545 | 2431 | 2403 |
| 45° | 2460 | 2344 | 2307 |
| 50° | 2368 | 2252 | 2196 |
| 55° | 2272 | 2146 | 2093 |
| 60° | 2162 | 2020 | 1976 |
| 65° | 2043 | 1891 | 1838 |
| 70° | 1892 | 1732 | 1689 |
| 75° | 1681 | 1542 | 1551 |
| 80° | 1429 | 1300 | 1289 |
| 85° | 1034 | 882  | 854  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 2460 cd/sqm

TEST NUMBER: P926611

CATALOG NUMBER: DFN2DIP-TR4F0-100D110US950-FLLONL

**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 349.4   | 1.8       |
| 10°-20°   | 983.0   | 5.0       |
| 20°-30°   | 1444.7  | 7.3       |
| 30°-40°   | 1677.9  | 8.5       |
| 40°-50°   | 1675.8  | 8.4       |
| 50°-60°   | 1461.2  | 7.4       |
| 60°-70°   | 1080.2  | 5.4       |
| 70°-80°   | 611.1   | 3.1       |
| 80°-90°   | 167.6   | 0.8       |
| 90°-100°  | 116.8   | 0.6       |
| 100°-110° | 435.4   | 2.2       |
| 110°-120° | 1154.6  | 5.8       |
| 120°-130° | 1915.0  | 9.7       |
| 130°-140° | 2034.2  | 10.3      |
| 140°-150° | 1890.5  | 9.5       |
| 150°-160° | 1519.9  | 7.7       |
| 160°-170° | 979.4   | 4.9       |
| 170°-180° | 337.1   | 1.7       |
| 0°-30°    | 2777.1  | 14.0      |
| 0°-40°    | 4454.9  | 22.5      |
| 0°-60°    | 7592.0  | 38.3      |
| 0°-90°    | 9450.8  | 47.7      |
| 90°-120°  | 1706.7  | 8.6       |
| 90°-150°  | 7546.4  | 38.0      |
| 90°-180°  | 10383.0 | 52.4      |
| 0°-180°   | 19833.7 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 3712 | 3712  | 3712 | 3712  | 3712 |      |
| 5°   | 3712 | 3698  | 3659 | 3687  | 3680 | 352  |
| 15°  | 3534 | 3512  | 3466 | 3480  | 3462 | 995  |
| 25°  | 3198 | 3170  | 3109 | 3116  | 3109 | 1472 |
| 35°  | 2759 | 2724  | 2666 | 2645  | 2627 | 1723 |
| 45°  | 2245 | 2220  | 2166 | 2128  | 2113 | 1733 |
| 55°  | 1699 | 1678  | 1635 | 1592  | 1574 | 1519 |
| 65°  | 1146 | 1124  | 1089 | 1057  | 1039 | 1133 |
| 75°  | 600  | 593   | 574  | 553   | 560  | 640  |
| 85°  | 146  | 143   | 139  | 128   | 125  | 163  |
| 90°  | 2    | 31    | 51   | 64    | 69   | 18   |
| 95°  | 166  | 82    | 100  | 113   | 110  | 197  |
| 105° | 779  | 856   | 156  | 184   | 195  | 832  |
| 115° | 1474 | 1517  | 1581 | 395   | 210  | 1451 |
| 125° | 2083 | 2117  | 2166 | 2183  | 2191 | 1858 |
| 135° | 2578 | 2619  | 2642 | 2668  | 2663 | 1992 |
| 145° | 2991 | 2988  | 3032 | 3050  | 3037 | 1871 |
| 155° | 3293 | 3270  | 3301 | 3316  | 3296 | 1517 |
| 165° | 3470 | 3454  | 3462 | 3480  | 3462 | 980  |
| 175° | 3549 | 3531  | 3536 | 3554  | 3529 | 338  |
| 180° | 3542 | 3542  | 3542 | 3542  | 3542 |      |

TEST NUMBER: P926611

CATALOG NUMBER: DFN2DIP-TR4F0-100D110US950-FLLONL

**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 3712.1 | 3712.1 | 3712.1 | 3712.1 | 3712.1 |
| 2.5°   | 3733.7 | 3715.8 | 3676.4 | 3712.1 | 3705.2 |
| 5°     | 3712.1 | 3698.1 | 3658.7 | 3687.1 | 3680.2 |
| 7.5°   | 3687.1 | 3665.8 | 3626.4 | 3655.3 | 3648.1 |
| 10°    | 3648.1 | 3623.1 | 3580.3 | 3608.7 | 3598.1 |
| 12.5°  | 3594.3 | 3573.1 | 3530.3 | 3548.1 | 3540.9 |
| 15°    | 3533.7 | 3512.5 | 3465.9 | 3480.3 | 3462.5 |
| 17.5°  | 3458.7 | 3437.5 | 3390.9 | 3408.7 | 3390.9 |
| 20°    | 3376.5 | 3355.3 | 3305.3 | 3315.9 | 3301.9 |
| 22.5°  | 3294.7 | 3262.6 | 3215.9 | 3215.9 | 3208.8 |
| 25°    | 3198.2 | 3169.8 | 3109.2 | 3116.0 | 3109.2 |
| 27.5°  | 3091.0 | 3066.0 | 3019.8 | 3009.2 | 2991.4 |
| 30°    | 2984.2 | 2955.4 | 2902.0 | 2891.4 | 2877.0 |
| 32.5°  | 2869.8 | 2848.6 | 2791.4 | 2769.8 | 2755.4 |
| 35°    | 2759.3 | 2723.7 | 2666.4 | 2644.9 | 2627.0 |
| 37.5°  | 2634.3 | 2602.0 | 2544.9 | 2519.9 | 2502.1 |
| 40°    | 2505.9 | 2477.1 | 2419.9 | 2388.1 | 2373.7 |
| 42.5°  | 2380.9 | 2352.1 | 2295.3 | 2259.4 | 2238.2 |
| 45°    | 2245.3 | 2220.3 | 2166.5 | 2127.5 | 2113.2 |
| 47.5°  | 2113.2 | 2088.2 | 2031.0 | 1991.6 | 1970.4 |
| 50°    | 1973.8 | 1956.0 | 1906.0 | 1856.0 | 1838.3 |
| 52.5°  | 1838.3 | 1813.3 | 1767.0 | 1727.7 | 1702.7 |
| 55°    | 1699.3 | 1677.7 | 1634.9 | 1592.0 | 1574.3 |
| 57.5°  | 1559.9 | 1542.0 | 1495.5 | 1452.8 | 1438.3 |
| 60°    | 1420.5 | 1406.5 | 1356.5 | 1317.1 | 1306.5 |
| 62.5°  | 1284.9 | 1259.9 | 1224.4 | 1188.8 | 1174.4 |
| 65°    | 1145.9 | 1124.4 | 1088.8 | 1056.6 | 1038.8 |
| 67.5°  | 1003.2 | 985.0  | 953.2  | 928.2  | 913.8  |
| 70°    | 871.0  | 856.6  | 824.4  | 799.5  | 785.4  |
| 72.5°  | 735.4  | 721.0  | 703.3  | 678.3  | 667.6  |
| 75°    | 599.5  | 592.7  | 574.5  | 553.3  | 560.5  |
| 77.5°  | 478.3  | 463.9  | 456.7  | 446.1  | 435.5  |
| 80°    | 357.1  | 353.4  | 346.1  | 335.5  | 328.4  |
| 82.5°  | 242.8  | 242.8  | 239.4  | 225.0  | 225.0  |
| 85°    | 146.2  | 142.8  | 139.4  | 128.4  | 125.0  |
| 87.5°  | 64.4   | 57.1   | 50.0   | 39.4   | 35.6   |
| 90°    | 2.5    | 30.7   | 51.1   | 64.2   | 69.1   |
| 92.5°  | 64.2   | 53.9   | 61.4   | 66.7   | 69.1   |
| 95°    | 166.5  | 81.9   | 99.8   | 112.9  | 110.2  |
| 97.5°  | 299.7  | 89.8   | 130.5  | 138.4  | 140.9  |
| 100°   | 453.7  | 102.6  | 146.1  | 166.5  | 171.6  |
| 102.5° | 622.6  | 617.7  | 151.2  | 179.3  | 187.2  |
| 105°   | 779.0  | 856.0  | 156.5  | 184.4  | 194.8  |
| 107.5° | 961.1  | 1024.9 | 161.6  | 189.6  | 200.0  |
| 110°   | 1135.4 | 1189.0 | 448.6  | 192.3  | 202.3  |



TEST NUMBER: P926611

CATALOG NUMBER: DFN2DIP-TR4F0-100D110US950-FLLONL

**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 1299.4 | 1345.3 | 1301.8 | 197.2  | 205.1  |
| 115°   | 1473.5 | 1517.0 | 1581.3 | 394.7  | 210.3  |
| 117.5° | 1624.8 | 1675.9 | 1719.7 | 1353.0 | 681.6  |
| 120°   | 1793.9 | 1832.3 | 1878.5 | 1909.2 | 1563.2 |
| 122.5° | 1937.3 | 1978.3 | 2029.7 | 2045.0 | 2047.8 |
| 125°   | 2083.3 | 2116.8 | 2165.5 | 2183.4 | 2191.1 |
| 127.5° | 2216.6 | 2252.5 | 2291.1 | 2316.7 | 2319.2 |
| 130°   | 2342.3 | 2383.4 | 2411.3 | 2439.7 | 2437.3 |
| 132.5° | 2470.4 | 2503.9 | 2531.9 | 2555.0 | 2552.6 |
| 135°   | 2578.2 | 2619.2 | 2642.0 | 2668.0 | 2662.7 |
| 137.5° | 2690.8 | 2721.5 | 2747.3 | 2772.9 | 2765.3 |
| 140°   | 2800.9 | 2821.6 | 2849.6 | 2872.7 | 2859.9 |
| 142.5° | 2893.4 | 2911.3 | 2944.5 | 2964.9 | 2952.2 |
| 145°   | 2990.8 | 2988.0 | 3031.5 | 3049.6 | 3036.8 |
| 147.5° | 3075.1 | 3067.5 | 3111.0 | 3123.8 | 3113.8 |
| 150°   | 3157.3 | 3139.3 | 3180.3 | 3195.6 | 3182.8 |
| 152.5° | 3226.3 | 3205.9 | 3244.3 | 3259.8 | 3241.9 |
| 155°   | 3293.0 | 3270.1 | 3300.8 | 3316.1 | 3295.7 |
| 157.5° | 3346.8 | 3326.4 | 3349.6 | 3367.5 | 3346.8 |
| 160°   | 3393.1 | 3377.5 | 3393.1 | 3408.3 | 3390.3 |
| 162.5° | 3433.8 | 3418.7 | 3431.4 | 3449.4 | 3426.3 |
| 165°   | 3469.8 | 3454.5 | 3462.2 | 3480.1 | 3462.2 |
| 167.5° | 3498.0 | 3482.6 | 3490.5 | 3508.4 | 3485.3 |
| 170°   | 3521.2 | 3505.7 | 3510.8 | 3528.8 | 3505.7 |
| 172.5° | 3536.4 | 3521.2 | 3526.4 | 3544.3 | 3521.2 |
| 175°   | 3549.2 | 3531.2 | 3536.4 | 3554.4 | 3528.8 |
| 177.5° | 3554.4 | 3536.4 | 3539.1 | 3557.1 | 3534.0 |
| 180°   | 3541.6 | 3541.6 | 3541.6 | 3541.6 | 3541.6 |

TEST NUMBER: P926611

CATALOG NUMBER: DFN2DIP-TR4F0-100D110US950-FLLONL

**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 | 10.80            | 11.64 | 11.78 | 12.63 | 13.94 | 10.37          | 11.21 | 11.35 | 12.20 | 13.51 |
|                 | 3H   | 12.46            | 13.21 | 13.45 | 14.21 | 15.54 | 11.99          | 12.74 | 12.98 | 13.74 | 15.07 |
|                 | 4H   | 13.05            | 13.76 | 14.05 | 14.76 | 16.10 | 12.57          | 13.29 | 13.58 | 14.29 | 15.63 |
|                 | 6H   | 13.45            | 14.10 | 14.46 | 15.11 | 16.46 | 12.97          | 13.63 | 13.98 | 14.64 | 15.98 |
|                 | 8H   | 13.55            | 14.18 | 14.57 | 15.20 | 16.54 | 13.08          | 13.70 | 14.09 | 14.73 | 16.07 |
|                 | 12H  | 13.60            | 14.19 | 14.62 | 15.21 | 16.58 | 13.12          | 13.71 | 14.14 | 14.73 | 16.10 |
| 4H              | 2H   | 11.26            | 11.98 | 12.27 | 12.98 | 14.31 | 10.92          | 11.63 | 11.93 | 12.63 | 13.97 |
|                 | 3H   | 13.13            | 13.72 | 14.14 | 14.75 | 16.10 | 12.73          | 13.33 | 13.75 | 14.36 | 15.71 |
|                 | 4H   | 13.84            | 14.38 | 14.86 | 15.41 | 16.78 | 13.43          | 13.98 | 14.46 | 15.00 | 16.37 |
|                 | 6H   | 14.35            | 14.82 | 15.39 | 15.87 | 17.24 | 13.94          | 14.41 | 14.98 | 15.46 | 16.83 |
|                 | 8H   | 14.50            | 14.94 | 15.54 | 15.98 | 17.36 | 14.09          | 14.53 | 15.13 | 15.57 | 16.95 |
|                 | 12H  | 14.57            | 14.97 | 15.63 | 16.03 | 17.41 | 14.15          | 14.55 | 15.21 | 15.60 | 16.99 |
| 8H              | 4H   | 14.03            | 14.47 | 15.07 | 15.51 | 16.89 | 13.67          | 14.11 | 14.71 | 15.15 | 16.53 |
|                 | 6H   | 14.66            | 15.03 | 15.72 | 16.11 | 17.49 | 14.30          | 14.66 | 15.36 | 15.75 | 17.13 |
|                 | 8H   | 14.89            | 15.20 | 15.95 | 16.27 | 17.67 | 14.52          | 14.84 | 15.58 | 15.90 | 17.30 |
|                 | 12H  | 15.02            | 15.30 | 16.09 | 16.36 | 17.80 | 14.63          | 14.91 | 15.70 | 15.97 | 17.41 |
| 12H             | 4H   | 14.02            | 14.41 | 15.07 | 15.47 | 16.86 | 13.67          | 14.06 | 14.72 | 15.12 | 16.51 |
|                 | 6H   | 14.69            | 15.01 | 15.76 | 16.08 | 17.48 | 14.34          | 14.66 | 15.41 | 15.73 | 17.13 |
|                 | 8H   | 14.94            | 15.22 | 16.01 | 16.28 | 17.72 | 14.58          | 14.86 | 15.65 | 15.92 | 17.36 |

END OF REPORT