

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: P915040

Luminaire Tested: DFN2DIP-SQ4F0-110D090US927-FLLFLL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P915040  
REPORT IS A COMBINATION OF REPORTS P900123 AND P896915  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-SQ4F0-110D090US927-FLLFLL  
Description: 4 foot, Square Define Geo, with Direct Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

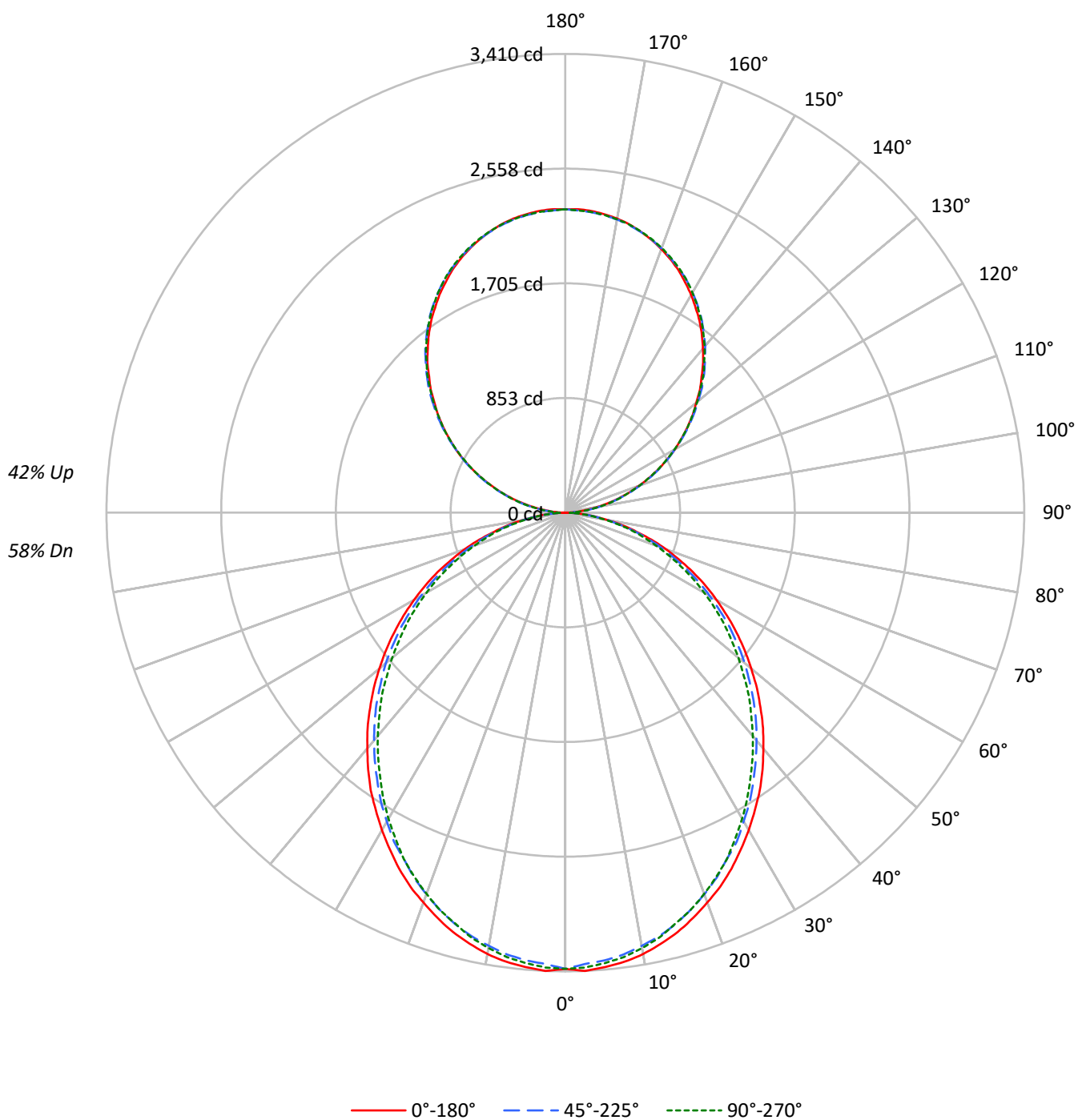
Lumens per Lamp: N/A  
Luminaire Lumens: 14936.6 lumens  
Efficiency: N/A  
Efficacy: 86.9 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29  
Luminous Opening: Rectangular w/ Sides (W: 3.92' x L: 3.92' x H: 0.1')  
CIE Type: General Diffuse

Input Watts (W): 171.8  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9951  
Total Harmonic Distortion (THDi): 0.07  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT

TEST NUMBER: P915040

CATALOG NUMBER: DFN2DIP-SQ4F0-110D090US927-FLLFLL

### Luminous Intensity Polar Plot



TEST NUMBER: P915040

CATALOG NUMBER: DFN2DIP-SQ4F0-110D090US927-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   | 109 | 109 | 109 | 109 | 102 | 102 | 102 | 102 | 88 | 88 | 88 | 75 | 75 | 75 | 63 | 63 | 63 |
| 1   | 100 | 95  | 91  | 88  | 93  | 89  | 85  | 82  | 77 | 74 | 72 | 66 | 64 | 62 | 56 | 55 | 53 |
| 2   | 91  | 83  | 77  | 72  | 84  | 78  | 72  | 68  | 67 | 63 | 60 | 58 | 55 | 52 | 49 | 47 | 45 |
| 3   | 83  | 73  | 66  | 60  | 77  | 68  | 62  | 56  | 59 | 54 | 50 | 51 | 47 | 44 | 44 | 41 | 38 |
| 4   | 76  | 65  | 57  | 51  | 70  | 61  | 53  | 48  | 53 | 47 | 43 | 46 | 41 | 38 | 39 | 36 | 33 |
| 5   | 70  | 58  | 49  | 43  | 65  | 54  | 47  | 41  | 47 | 42 | 37 | 41 | 36 | 33 | 35 | 32 | 29 |
| 6   | 64  | 52  | 44  | 38  | 60  | 49  | 41  | 36  | 43 | 37 | 32 | 37 | 32 | 29 | 32 | 28 | 25 |
| 7   | 59  | 47  | 39  | 33  | 55  | 44  | 37  | 32  | 39 | 33 | 29 | 34 | 29 | 26 | 29 | 25 | 23 |
| 8   | 55  | 43  | 35  | 29  | 51  | 40  | 33  | 28  | 35 | 30 | 25 | 31 | 26 | 23 | 27 | 23 | 20 |
| 9   | 51  | 39  | 31  | 26  | 48  | 37  | 30  | 25  | 32 | 27 | 23 | 29 | 24 | 21 | 25 | 21 | 18 |
| 10  | 48  | 36  | 28  | 24  | 45  | 34  | 27  | 23  | 30 | 24 | 21 | 26 | 22 | 19 | 23 | 19 | 17 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 2379 | 2379 | 2379 |
| 5°  | 2383 | 2346 | 2362 |
| 10° | 2364 | 2315 | 2331 |
| 15° | 2329 | 2278 | 2282 |
| 20° | 2282 | 2225 | 2231 |
| 25° | 2235 | 2162 | 2173 |
| 30° | 2176 | 2104 | 2098 |
| 35° | 2121 | 2035 | 2019 |
| 40° | 2053 | 1965 | 1944 |
| 45° | 1985 | 1895 | 1868 |
| 50° | 1910 | 1822 | 1779 |
| 55° | 1832 | 1737 | 1697 |
| 60° | 1744 | 1637 | 1604 |
| 65° | 1648 | 1533 | 1494 |
| 70° | 1525 | 1405 | 1375 |
| 75° | 1355 | 1254 | 1267 |
| 80° | 1151 | 1061 | 1059 |
| 85° | 833  | 725  | 712  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 1985 cd/sqm

TEST NUMBER: P915040

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**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 319.1   | 2.1       |
| 10°-20°   | 897.9   | 6.0       |
| 20°-30°   | 1319.6  | 8.8       |
| 30°-40°   | 1532.6  | 10.3      |
| 40°-50°   | 1530.7  | 10.2      |
| 50°-60°   | 1334.7  | 8.9       |
| 60°-70°   | 986.7   | 6.6       |
| 70°-80°   | 558.2   | 3.7       |
| 80°-90°   | 153.7   | 1.0       |
| 90°-100°  | 139.5   | 0.9       |
| 100°-110° | 443.3   | 3.0       |
| 110°-120° | 758.7   | 5.1       |
| 120°-130° | 997.8   | 6.7       |
| 130°-140° | 1120.0  | 7.5       |
| 140°-150° | 1098.2  | 7.4       |
| 150°-160° | 921.3   | 6.2       |
| 160°-170° | 611.0   | 4.1       |
| 170°-180° | 213.5   | 1.4       |
| 0°-30°    | 2536.6  | 17.0      |
| 0°-40°    | 4069.2  | 27.2      |
| 0°-60°    | 6934.6  | 46.4      |
| 0°-90°    | 8633.2  | 57.8      |
| 90°-120°  | 1341.5  | 9.0       |
| 90°-150°  | 4557.5  | 30.5      |
| 90°-180°  | 6303.0  | 42.2      |
| 0°-180°   | 14936.6 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 3391 | 3391  | 3391 | 3391  | 3391 |      |
| 5°   | 3391 | 3378  | 3342 | 3368  | 3362 | 322  |
| 15°  | 3228 | 3208  | 3166 | 3179  | 3163 | 909  |
| 25°  | 2921 | 2895  | 2840 | 2846  | 2840 | 1344 |
| 35°  | 2520 | 2488  | 2436 | 2416  | 2400 | 1574 |
| 45°  | 2051 | 2028  | 1979 | 1943  | 1930 | 1583 |
| 55°  | 1552 | 1532  | 1493 | 1454  | 1438 | 1388 |
| 65°  | 1047 | 1027  | 994  | 965   | 949  | 1035 |
| 75°  | 548  | 541   | 525  | 505   | 512  | 585  |
| 85°  | 134  | 130   | 127  | 117   | 114  | 149  |
| 90°  | 2    | 24    | 67   | 62    | 65   | 14   |
| 95°  | 99   | 118   | 122  | 122   | 118  | 110  |
| 105° | 409  | 415   | 419  | 422   | 422  | 432  |
| 115° | 761  | 772   | 769  | 767   | 761  | 753  |
| 125° | 1107 | 1124  | 1119 | 1113  | 1111 | 990  |
| 135° | 1432 | 1453  | 1458 | 1455  | 1450 | 1107 |
| 145° | 1739 | 1752  | 1763 | 1765  | 1758 | 1086 |
| 155° | 1988 | 1994  | 2000 | 2009  | 2003 | 915  |
| 165° | 2163 | 2161  | 2161 | 2175  | 2165 | 610  |
| 175° | 2251 | 2245  | 2241 | 2255  | 2243 | 214  |
| 180° | 2255 | 2255  | 2255 | 2255  | 2255 |      |

TEST NUMBER: P915040

CATALOG NUMBER: DFN2DIP-SQ4F0-110D090US927-FLLFLL

**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 3390.7 | 3390.7 | 3390.7 | 3390.7 | 3390.7 |
| 2.5°   | 3410.3 | 3394.1 | 3358.1 | 3390.7 | 3384.4 |
| 5°     | 3390.7 | 3377.9 | 3341.9 | 3367.8 | 3361.6 |
| 7.5°   | 3367.8 | 3348.5 | 3312.5 | 3338.8 | 3332.2 |
| 10°    | 3332.2 | 3309.3 | 3270.3 | 3296.2 | 3286.5 |
| 12.5°  | 3283.1 | 3263.7 | 3224.7 | 3240.9 | 3234.3 |
| 15°    | 3227.7 | 3208.3 | 3165.8 | 3178.9 | 3162.7 |
| 17.5°  | 3159.2 | 3139.9 | 3097.3 | 3113.6 | 3097.3 |
| 20°    | 3084.2 | 3064.8 | 3019.2 | 3028.8 | 3016.1 |
| 22.5°  | 3009.5 | 2980.0 | 2937.5 | 2937.5 | 2930.9 |
| 25°    | 2921.2 | 2895.3 | 2840.0 | 2846.2 | 2840.0 |
| 27.5°  | 2823.3 | 2800.5 | 2758.3 | 2748.6 | 2732.4 |
| 30°    | 2725.8 | 2699.5 | 2650.7 | 2641.1 | 2627.9 |
| 32.5°  | 2621.3 | 2602.0 | 2549.7 | 2530.0 | 2516.8 |
| 35°    | 2520.3 | 2487.8 | 2435.6 | 2415.8 | 2399.6 |
| 37.5°  | 2406.2 | 2376.8 | 2324.6 | 2301.7 | 2285.4 |
| 40°    | 2288.9 | 2262.6 | 2210.4 | 2181.4 | 2168.2 |
| 42.5°  | 2174.8 | 2148.5 | 2096.6 | 2063.7 | 2044.4 |
| 45°    | 2051.0 | 2028.1 | 1978.9 | 1943.4 | 1930.2 |
| 47.5°  | 1930.2 | 1907.4 | 1855.1 | 1819.2 | 1799.8 |
| 50°    | 1802.9 | 1786.7 | 1741.0 | 1695.3 | 1679.1 |
| 52.5°  | 1679.1 | 1656.2 | 1614.1 | 1578.0 | 1555.2 |
| 55°    | 1552.1 | 1532.4 | 1493.3 | 1454.2 | 1438.0 |
| 57.5°  | 1424.8 | 1408.6 | 1366.0 | 1326.9 | 1313.8 |
| 60°    | 1297.5 | 1284.8 | 1239.1 | 1203.1 | 1193.4 |
| 62.5°  | 1173.7 | 1150.9 | 1118.3 | 1085.8 | 1072.7 |
| 65°    | 1046.7 | 1027.0 | 994.5  | 965.1  | 948.9  |
| 67.5°  | 916.3  | 899.8  | 870.7  | 847.9  | 834.7  |
| 70°    | 795.6  | 782.4  | 753.0  | 730.2  | 717.4  |
| 72.5°  | 671.8  | 658.6  | 642.4  | 619.6  | 609.8  |
| 75°    | 547.6  | 541.4  | 524.7  | 505.4  | 512.0  |
| 77.5°  | 436.9  | 423.7  | 417.2  | 407.5  | 397.8  |
| 80°    | 326.2  | 322.7  | 316.2  | 306.5  | 299.9  |
| 82.5°  | 221.7  | 221.7  | 218.6  | 205.5  | 205.5  |
| 85°    | 133.6  | 130.4  | 127.3  | 117.2  | 114.2  |
| 87.5°  | 58.8   | 52.2   | 45.6   | 36.0   | 32.5   |
| 90°    | 2.1    | 24.5   | 66.6   | 62.5   | 64.6   |
| 92.5°  | 42.1   | 57.1   | 59.2   | 61.2   | 61.2   |
| 95°    | 99.3   | 118.3  | 121.7  | 121.7  | 118.3  |
| 97.5°  | 165.2  | 182.8  | 190.4  | 190.4  | 190.4  |
| 100°   | 241.3  | 257.0  | 262.4  | 262.4  | 260.4  |
| 102.5° | 321.5  | 333.1  | 340.6  | 342.6  | 340.6  |
| 105°   | 409.2  | 414.6  | 418.7  | 422.2  | 422.2  |
| 107.5° | 496.2  | 504.4  | 504.4  | 505.7  | 496.2  |
| 110°   | 580.5  | 591.4  | 591.4  | 591.4  | 586.0  |



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**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 671.6  | 683.2  | 681.1  | 675.7  | 671.6  |
| 115°   | 761.4  | 772.2  | 768.8  | 766.8  | 761.4  |
| 117.5° | 850.4  | 865.4  | 855.9  | 850.4  | 844.9  |
| 120°   | 940.2  | 955.1  | 940.2  | 940.2  | 934.0  |
| 122.5° | 1021.7 | 1040.8 | 1031.3 | 1025.8 | 1021.7 |
| 125°   | 1107.4 | 1124.3 | 1119.0 | 1112.8 | 1110.8 |
| 127.5° | 1191.0 | 1212.0 | 1204.6 | 1196.4 | 1191.0 |
| 130°   | 1269.2 | 1293.6 | 1290.2 | 1286.1 | 1278.7 |
| 132.5° | 1356.8 | 1375.9 | 1377.2 | 1367.7 | 1362.3 |
| 135°   | 1432.3 | 1453.3 | 1457.5 | 1455.4 | 1450.0 |
| 137.5° | 1516.6 | 1533.6 | 1537.0 | 1535.6 | 1527.5 |
| 140°   | 1590.7 | 1607.7 | 1617.2 | 1617.2 | 1609.7 |
| 142.5° | 1666.8 | 1683.8 | 1689.2 | 1691.3 | 1683.8 |
| 145°   | 1738.9 | 1752.5 | 1763.3 | 1765.4 | 1757.9 |
| 147.5° | 1803.5 | 1820.4 | 1828.6 | 1832.0 | 1824.6 |
| 150°   | 1870.1 | 1881.7 | 1889.1 | 1895.2 | 1889.1 |
| 152.5° | 1929.2 | 1940.8 | 1950.3 | 1957.8 | 1950.3 |
| 155°   | 1988.4 | 1993.8 | 1999.9 | 2009.4 | 2003.3 |
| 157.5° | 2039.3 | 2043.4 | 2046.8 | 2060.4 | 2050.9 |
| 160°   | 2084.9 | 2089.0 | 2091.0 | 2102.5 | 2094.4 |
| 162.5° | 2127.0 | 2127.0 | 2129.1 | 2142.0 | 2132.5 |
| 165°   | 2163.1 | 2161.0 | 2161.0 | 2174.6 | 2165.1 |
| 167.5° | 2195.7 | 2189.6 | 2189.6 | 2203.1 | 2193.6 |
| 170°   | 2220.2 | 2214.7 | 2212.7 | 2226.3 | 2214.7 |
| 172.5° | 2237.1 | 2231.7 | 2229.7 | 2243.3 | 2231.7 |
| 175°   | 2250.7 | 2245.3 | 2241.2 | 2254.9 | 2243.3 |
| 177.5° | 2258.2 | 2252.8 | 2248.7 | 2260.3 | 2248.7 |
| 180°   | 2254.9 | 2254.9 | 2254.9 | 2254.9 | 2254.9 |

TEST NUMBER: P915040

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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 | 10.99            | 11.92 | 11.87 | 12.83 | 13.98 | 10.54          | 11.48 | 11.43 | 12.38 | 13.54 |
|                 | 3H   | 12.66            | 13.50 | 13.55 | 14.41 | 15.59 | 12.16          | 13.01 | 13.06 | 13.92 | 15.10 |
|                 | 4H   | 13.25            | 14.04 | 14.16 | 14.97 | 16.16 | 12.76          | 13.55 | 13.67 | 14.47 | 15.66 |
|                 | 6H   | 13.66            | 14.39 | 14.58 | 15.32 | 16.52 | 13.16          | 13.89 | 14.08 | 14.82 | 16.02 |
|                 | 8H   | 13.77            | 14.46 | 14.70 | 15.41 | 16.61 | 13.26          | 13.96 | 14.20 | 14.91 | 16.11 |
|                 | 12H  | 13.82            | 14.48 | 14.76 | 15.42 | 16.65 | 13.31          | 13.97 | 14.25 | 14.91 | 16.14 |
| 4H              | 2H   | 11.46            | 12.25 | 12.38 | 13.17 | 14.36 | 11.10          | 11.90 | 12.02 | 12.82 | 14.01 |
|                 | 3H   | 13.33            | 14.00 | 14.26 | 14.95 | 16.15 | 12.93          | 13.59 | 13.86 | 14.54 | 15.75 |
|                 | 4H   | 14.05            | 14.66 | 14.99 | 15.61 | 16.84 | 13.63          | 14.24 | 14.57 | 15.18 | 16.41 |
|                 | 6H   | 14.58            | 15.10 | 15.53 | 16.07 | 17.30 | 14.15          | 14.67 | 15.10 | 15.64 | 16.87 |
|                 | 8H   | 14.73            | 15.22 | 15.69 | 16.18 | 17.43 | 14.29          | 14.78 | 15.25 | 15.75 | 16.99 |
|                 | 12H  | 14.81            | 15.25 | 15.79 | 16.23 | 17.48 | 14.36          | 14.80 | 15.34 | 15.78 | 17.03 |
| 8H              | 4H   | 14.26            | 14.74 | 15.21 | 15.71 | 16.95 | 13.88          | 14.37 | 14.84 | 15.33 | 16.58 |
|                 | 6H   | 14.90            | 15.30 | 15.88 | 16.31 | 17.55 | 14.51          | 14.92 | 15.49 | 15.92 | 17.17 |
|                 | 8H   | 15.12            | 15.48 | 16.11 | 16.47 | 17.73 | 14.73          | 15.08 | 15.72 | 16.08 | 17.34 |
|                 | 12H  | 15.26            | 15.57 | 16.25 | 16.56 | 17.87 | 14.85          | 15.16 | 15.84 | 16.15 | 17.46 |
| 12H             | 4H   | 14.25            | 14.69 | 15.22 | 15.67 | 16.92 | 13.88          | 14.32 | 14.85 | 15.30 | 16.55 |
|                 | 6H   | 14.93            | 15.28 | 15.92 | 16.28 | 17.54 | 14.56          | 14.91 | 15.55 | 15.91 | 17.17 |
|                 | 8H   | 15.18            | 15.49 | 16.17 | 16.48 | 17.79 | 14.80          | 15.11 | 15.79 | 16.10 | 17.41 |

END OF REPORT