

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: P916693

Luminaire Tested: DFN2DIP-PN3F0-060D080US930-FLLONL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P916693  
REPORT IS A COMBINATION OF REPORTS P901107 AND P897955  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-PN3F0-060D080US930-FLLONL  
Description: 3 foot, Pentagon Define Geo, with Direct Frosted Lens, Indirect Open No Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

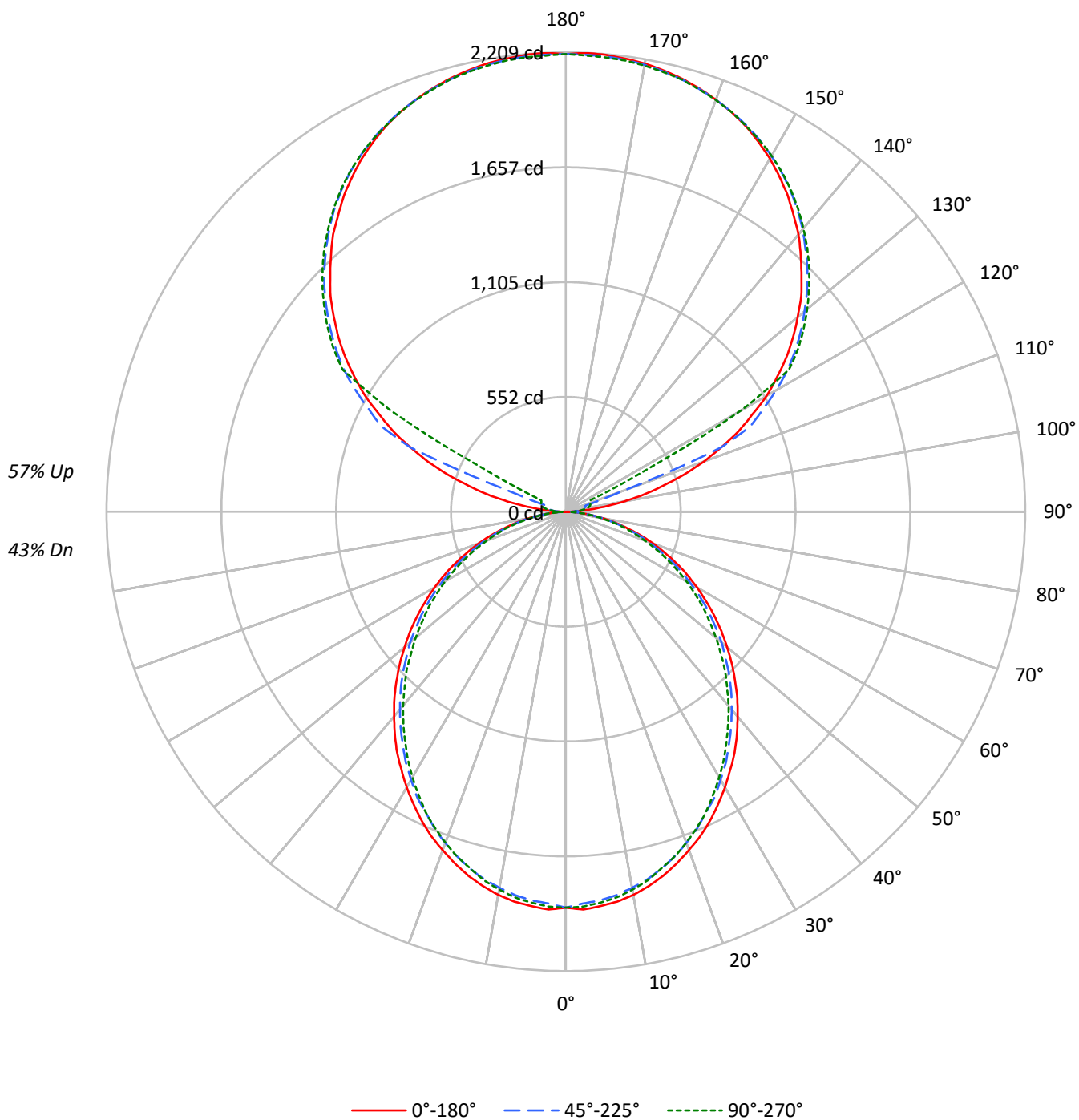
Lumens per Lamp: N/A  
Luminaire Lumens: 11300.0 lumens  
Efficiency: N/A  
Efficacy: 95.4 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29  
Luminous Opening: Rectangular w/ Sides (W: 2.96' x L: 3.11' x H: 0.1')  
CIE Type: General Diffuse

Input Watts (W): 118.4  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9821  
Total Harmonic Distortion (THDi): 0.08  
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



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**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   | 105 | 105 | 105 | 105 | 96 | 96 | 96 | 96 | 79 | 79 | 79 | 64 | 64 | 64 | 50 | 50 | 50 |
| 1   | 96  | 92  | 88  | 85  | 88 | 84 | 81 | 78 | 70 | 67 | 65 | 56 | 55 | 53 | 44 | 43 | 42 |
| 2   | 88  | 80  | 74  | 69  | 80 | 74 | 68 | 64 | 61 | 57 | 54 | 49 | 47 | 44 | 39 | 37 | 35 |
| 3   | 80  | 71  | 63  | 58  | 73 | 65 | 58 | 53 | 54 | 49 | 45 | 44 | 40 | 38 | 34 | 32 | 30 |
| 4   | 73  | 62  | 55  | 49  | 66 | 57 | 50 | 45 | 48 | 43 | 39 | 39 | 35 | 32 | 31 | 28 | 26 |
| 5   | 67  | 56  | 48  | 42  | 61 | 51 | 44 | 39 | 43 | 37 | 33 | 35 | 31 | 28 | 28 | 25 | 23 |
| 6   | 62  | 50  | 42  | 36  | 56 | 46 | 39 | 34 | 38 | 33 | 29 | 31 | 27 | 24 | 25 | 22 | 20 |
| 7   | 57  | 45  | 37  | 32  | 52 | 41 | 34 | 29 | 35 | 29 | 25 | 29 | 25 | 22 | 23 | 20 | 18 |
| 8   | 53  | 41  | 33  | 28  | 48 | 38 | 31 | 26 | 32 | 26 | 23 | 26 | 22 | 19 | 21 | 18 | 16 |
| 9   | 49  | 37  | 30  | 25  | 45 | 34 | 28 | 23 | 29 | 24 | 20 | 24 | 20 | 17 | 19 | 16 | 14 |
| 10  | 46  | 34  | 27  | 22  | 42 | 31 | 25 | 21 | 27 | 22 | 18 | 22 | 18 | 16 | 18 | 15 | 13 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 2225 | 2225 | 2225 |
| 5°  | 2227 | 2192 | 2208 |
| 10° | 2208 | 2161 | 2177 |
| 15° | 2174 | 2124 | 2129 |
| 20° | 2129 | 2073 | 2081 |
| 25° | 2084 | 2012 | 2024 |
| 30° | 2028 | 1956 | 1953 |
| 35° | 1975 | 1890 | 1878 |
| 40° | 1909 | 1822 | 1806 |
| 45° | 1844 | 1755 | 1733 |
| 50° | 1773 | 1684 | 1648 |
| 55° | 1698 | 1602 | 1569 |
| 60° | 1613 | 1505 | 1480 |
| 65° | 1521 | 1404 | 1374 |
| 70° | 1403 | 1281 | 1260 |
| 75° | 1240 | 1133 | 1153 |
| 80° | 1043 | 945  | 951  |
| 85° | 735  | 625  | 620  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 1844 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 179.1   | 1.6       |
| 10°-20°   | 504.1   | 4.5       |
| 20°-30°   | 740.8   | 6.6       |
| 30°-40°   | 860.4   | 7.6       |
| 40°-50°   | 859.3   | 7.6       |
| 50°-60°   | 749.3   | 6.6       |
| 60°-70°   | 553.9   | 4.9       |
| 70°-80°   | 313.4   | 2.8       |
| 80°-90°   | 86.6    | 0.8       |
| 90°-100°  | 72.6    | 0.6       |
| 100°-110° | 270.6   | 2.4       |
| 110°-120° | 717.6   | 6.4       |
| 120°-130° | 1190.2  | 10.5      |
| 130°-140° | 1264.3  | 11.2      |
| 140°-150° | 1175.0  | 10.4      |
| 150°-160° | 944.7   | 8.4       |
| 160°-170° | 608.7   | 5.4       |
| 170°-180° | 209.5   | 1.9       |
| 0°-30°    | 1424.0  | 12.6      |
| 0°-40°    | 2284.3  | 20.2      |
| 0°-60°    | 3892.9  | 34.5      |
| 0°-90°    | 4846.7  | 42.9      |
| 90°-120°  | 1060.8  | 9.4       |
| 90°-150°  | 4690.4  | 41.5      |
| 90°-180°  | 6453.0  | 57.1      |
| 0°-180°   | 11300.0 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 1903 | 1903  | 1903 | 1903  | 1903 |      |
| 5°   | 1903 | 1896  | 1876 | 1891  | 1887 | 181  |
| 15°  | 1812 | 1801  | 1777 | 1785  | 1776 | 510  |
| 25°  | 1640 | 1625  | 1594 | 1598  | 1594 | 755  |
| 35°  | 1415 | 1397  | 1367 | 1356  | 1347 | 884  |
| 45°  | 1151 | 1138  | 1111 | 1091  | 1084 | 889  |
| 55°  | 871  | 860   | 838  | 816   | 807  | 779  |
| 65°  | 588  | 577   | 558  | 542   | 533  | 581  |
| 75°  | 307  | 304   | 295  | 284   | 287  | 328  |
| 85°  | 75   | 73    | 71   | 66    | 64   | 84   |
| 90°  | 2    | 19    | 32   | 40    | 43   | 10   |
| 95°  | 104  | 51    | 62   | 70    | 68   | 123  |
| 105° | 484  | 532   | 97   | 115   | 121  | 517  |
| 115° | 916  | 943   | 983  | 245   | 131  | 902  |
| 125° | 1295 | 1316  | 1346 | 1357  | 1362 | 1155 |
| 135° | 1602 | 1628  | 1642 | 1658  | 1655 | 1238 |
| 145° | 1859 | 1857  | 1884 | 1895  | 1887 | 1163 |
| 155° | 2047 | 2032  | 2052 | 2061  | 2048 | 943  |
| 165° | 2157 | 2147  | 2152 | 2163  | 2152 | 609  |
| 175° | 2206 | 2195  | 2198 | 2209  | 2193 | 210  |
| 180° | 2201 | 2201  | 2201 | 2201  | 2201 |      |

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**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 1903.4 | 1903.4 | 1903.4 | 1903.4 | 1903.4 |
| 2.5°   | 1914.5 | 1905.4 | 1885.1 | 1903.4 | 1899.9 |
| 5°     | 1903.4 | 1896.2 | 1876.0 | 1890.6 | 1887.1 |
| 7.5°   | 1890.6 | 1879.8 | 1859.5 | 1874.3 | 1870.6 |
| 10°    | 1870.6 | 1857.8 | 1835.8 | 1850.4 | 1844.9 |
| 12.5°  | 1843.1 | 1832.1 | 1810.2 | 1819.3 | 1815.7 |
| 15°    | 1811.9 | 1801.1 | 1777.2 | 1784.6 | 1775.5 |
| 17.5°  | 1773.5 | 1762.7 | 1738.8 | 1747.8 | 1738.8 |
| 20°    | 1731.4 | 1720.5 | 1694.8 | 1700.3 | 1693.1 |
| 22.5°  | 1689.5 | 1672.9 | 1649.0 | 1649.0 | 1645.4 |
| 25°    | 1639.9 | 1625.4 | 1594.2 | 1597.7 | 1594.2 |
| 27.5°  | 1584.9 | 1572.1 | 1548.4 | 1543.0 | 1533.9 |
| 30°    | 1530.2 | 1515.4 | 1488.1 | 1482.6 | 1475.2 |
| 32.5°  | 1471.5 | 1460.7 | 1431.3 | 1420.2 | 1412.9 |
| 35°    | 1414.9 | 1396.6 | 1367.3 | 1356.2 | 1347.0 |
| 37.5°  | 1350.8 | 1334.2 | 1305.0 | 1292.1 | 1283.0 |
| 40°    | 1284.9 | 1270.2 | 1240.9 | 1224.6 | 1217.2 |
| 42.5°  | 1220.8 | 1206.1 | 1177.0 | 1158.5 | 1147.6 |
| 45°    | 1151.4 | 1138.5 | 1110.9 | 1091.0 | 1083.5 |
| 47.5°  | 1083.5 | 1070.7 | 1041.5 | 1021.2 | 1010.3 |
| 50°    | 1012.1 | 1003.0 | 977.4  | 951.7  | 942.6  |
| 52.5°  | 942.6  | 929.8  | 906.0  | 885.9  | 873.1  |
| 55°    | 871.3  | 860.2  | 838.3  | 816.4  | 807.2  |
| 57.5°  | 799.9  | 790.8  | 766.9  | 744.9  | 737.5  |
| 60°    | 728.4  | 721.2  | 695.6  | 675.4  | 669.9  |
| 62.5°  | 658.8  | 646.0  | 627.8  | 609.5  | 602.2  |
| 65°    | 587.6  | 576.6  | 558.3  | 541.8  | 532.6  |
| 67.5°  | 514.4  | 505.1  | 488.8  | 476.0  | 468.6  |
| 70°    | 446.6  | 439.3  | 422.7  | 409.9  | 402.8  |
| 72.5°  | 377.1  | 369.7  | 360.6  | 347.8  | 342.3  |
| 75°    | 307.4  | 303.9  | 294.6  | 283.7  | 287.4  |
| 77.5°  | 245.2  | 237.9  | 234.2  | 228.8  | 223.3  |
| 80°    | 183.1  | 181.2  | 177.5  | 172.0  | 168.4  |
| 82.5°  | 124.5  | 124.5  | 122.7  | 115.4  | 115.4  |
| 85°    | 74.9   | 73.2   | 71.4   | 65.8   | 64.1   |
| 87.5°  | 33.0   | 29.4   | 25.6   | 20.2   | 18.3   |
| 90°    | 1.5    | 19.1   | 31.8   | 39.9   | 43.0   |
| 92.5°  | 39.9   | 33.5   | 38.2   | 41.4   | 43.0   |
| 95°    | 103.5  | 50.9   | 62.0   | 70.2   | 68.5   |
| 97.5°  | 186.3  | 55.8   | 81.1   | 86.1   | 87.6   |
| 100°   | 282.0  | 63.8   | 90.8   | 103.5  | 106.6  |
| 102.5° | 387.0  | 383.9  | 94.0   | 111.4  | 116.3  |
| 105°   | 484.2  | 532.1  | 97.2   | 114.6  | 121.1  |
| 107.5° | 597.3  | 637.0  | 100.4  | 117.8  | 124.3  |
| 110°   | 705.7  | 739.0  | 278.8  | 119.5  | 125.8  |

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**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 807.6  | 836.2  | 809.2  | 122.5  | 127.5  |
| 115°   | 915.8  | 942.9  | 982.8  | 245.3  | 130.7  |
| 117.5° | 1009.8 | 1041.6 | 1068.9 | 840.9  | 423.7  |
| 120°   | 1115.0 | 1138.8 | 1167.6 | 1186.7 | 971.6  |
| 122.5° | 1204.0 | 1229.6 | 1261.6 | 1271.0 | 1272.8 |
| 125°   | 1294.9 | 1315.6 | 1345.9 | 1357.1 | 1361.8 |
| 127.5° | 1377.7 | 1400.0 | 1424.1 | 1439.9 | 1441.4 |
| 130°   | 1455.8 | 1481.3 | 1498.8 | 1516.4 | 1514.8 |
| 132.5° | 1535.5 | 1556.2 | 1573.7 | 1588.0 | 1586.5 |
| 135°   | 1602.4 | 1627.9 | 1642.1 | 1658.2 | 1655.0 |
| 137.5° | 1672.4 | 1691.5 | 1707.6 | 1723.5 | 1718.7 |
| 140°   | 1740.8 | 1753.7 | 1771.2 | 1785.5 | 1777.5 |
| 142.5° | 1798.4 | 1809.5 | 1830.1 | 1842.8 | 1834.8 |
| 145°   | 1858.9 | 1857.2 | 1884.2 | 1895.4 | 1887.4 |
| 147.5° | 1911.3 | 1906.6 | 1933.6 | 1941.6 | 1935.3 |
| 150°   | 1962.3 | 1951.2 | 1976.7 | 1986.1 | 1978.2 |
| 152.5° | 2005.3 | 1992.6 | 2016.4 | 2026.1 | 2014.9 |
| 155°   | 2046.7 | 2032.5 | 2051.6 | 2061.1 | 2048.4 |
| 157.5° | 2080.2 | 2067.5 | 2081.9 | 2093.0 | 2080.2 |
| 160°   | 2108.9 | 2099.3 | 2108.9 | 2118.4 | 2107.2 |
| 162.5° | 2134.3 | 2124.8 | 2132.7 | 2143.9 | 2129.6 |
| 165°   | 2156.6 | 2147.2 | 2151.9 | 2163.0 | 2151.9 |
| 167.5° | 2174.2 | 2164.5 | 2169.4 | 2180.6 | 2166.2 |
| 170°   | 2188.6 | 2178.9 | 2182.1 | 2193.3 | 2178.9 |
| 172.5° | 2198.0 | 2188.6 | 2191.8 | 2202.9 | 2188.6 |
| 175°   | 2206.0 | 2194.8 | 2198.0 | 2209.1 | 2193.3 |
| 177.5° | 2209.1 | 2198.0 | 2199.7 | 2210.8 | 2196.5 |
| 180°   | 2201.2 | 2201.2 | 2201.2 | 2201.2 | 2201.2 |

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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 | 9.32             | 10.12 | 10.33 | 11.14 | 12.51 | 8.88           | 9.68  | 9.89  | 10.70 | 12.07 |
|                 | 3H   | 10.97            | 11.69 | 11.99 | 12.72 | 14.11 | 10.48          | 11.20 | 11.51 | 12.24 | 13.63 |
|                 | 4H   | 11.55            | 12.23 | 12.59 | 13.26 | 14.66 | 11.06          | 11.74 | 12.10 | 12.78 | 14.18 |
|                 | 6H   | 11.94            | 12.57 | 12.99 | 13.61 | 15.02 | 11.45          | 12.08 | 12.50 | 13.12 | 14.53 |
|                 | 8H   | 12.04            | 12.64 | 13.09 | 13.69 | 15.10 | 11.55          | 12.15 | 12.60 | 13.20 | 14.61 |
|                 | 12H  | 12.08            | 12.65 | 13.14 | 13.70 | 15.13 | 11.59          | 12.15 | 12.65 | 13.20 | 14.63 |
| 4H              | 2H   | 9.77             | 10.45 | 10.81 | 11.48 | 12.88 | 9.42           | 10.10 | 10.46 | 11.13 | 12.53 |
|                 | 3H   | 11.62            | 12.19 | 12.67 | 13.25 | 14.66 | 11.22          | 11.79 | 12.27 | 12.85 | 14.26 |
|                 | 4H   | 12.33            | 12.85 | 13.39 | 13.90 | 15.34 | 11.91          | 12.43 | 12.97 | 13.49 | 14.92 |
|                 | 6H   | 12.83            | 13.28 | 13.90 | 14.36 | 15.79 | 12.41          | 12.86 | 13.48 | 13.94 | 15.36 |
|                 | 8H   | 12.98            | 13.40 | 14.05 | 14.47 | 15.91 | 12.55          | 12.97 | 13.62 | 14.04 | 15.48 |
|                 | 12H  | 13.05            | 13.42 | 14.13 | 14.51 | 15.96 | 12.61          | 12.99 | 13.70 | 14.07 | 15.52 |
| 8H              | 4H   | 12.52            | 12.93 | 13.58 | 14.00 | 15.45 | 12.15          | 12.56 | 13.21 | 13.63 | 15.08 |
|                 | 6H   | 13.14            | 13.48 | 14.23 | 14.60 | 16.03 | 12.76          | 13.11 | 13.85 | 14.22 | 15.66 |
|                 | 8H   | 13.35            | 13.66 | 14.45 | 14.75 | 16.21 | 12.97          | 13.27 | 14.07 | 14.37 | 15.83 |
|                 | 12H  | 13.48            | 13.74 | 14.58 | 14.84 | 16.33 | 13.08          | 13.34 | 14.18 | 14.44 | 15.93 |
| 12H             | 4H   | 12.50            | 12.88 | 13.58 | 13.96 | 15.41 | 12.14          | 12.51 | 13.22 | 13.60 | 15.05 |
|                 | 6H   | 13.16            | 13.47 | 14.26 | 14.56 | 16.02 | 12.80          | 13.10 | 13.90 | 14.20 | 15.66 |
|                 | 8H   | 13.40            | 13.67 | 14.50 | 14.76 | 16.25 | 13.03          | 13.29 | 14.13 | 14.39 | 15.88 |

END OF REPORT