

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: P916898

Luminaire Tested: DFN2DIP-PN4F0-070D050US930-RLLFLL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P916898  
REPORT IS A COMBINATION OF REPORTS P899634 AND P896497  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-PN4F0-070D050US930-RLLFLL  
Description: 4 foot, Pentagon Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

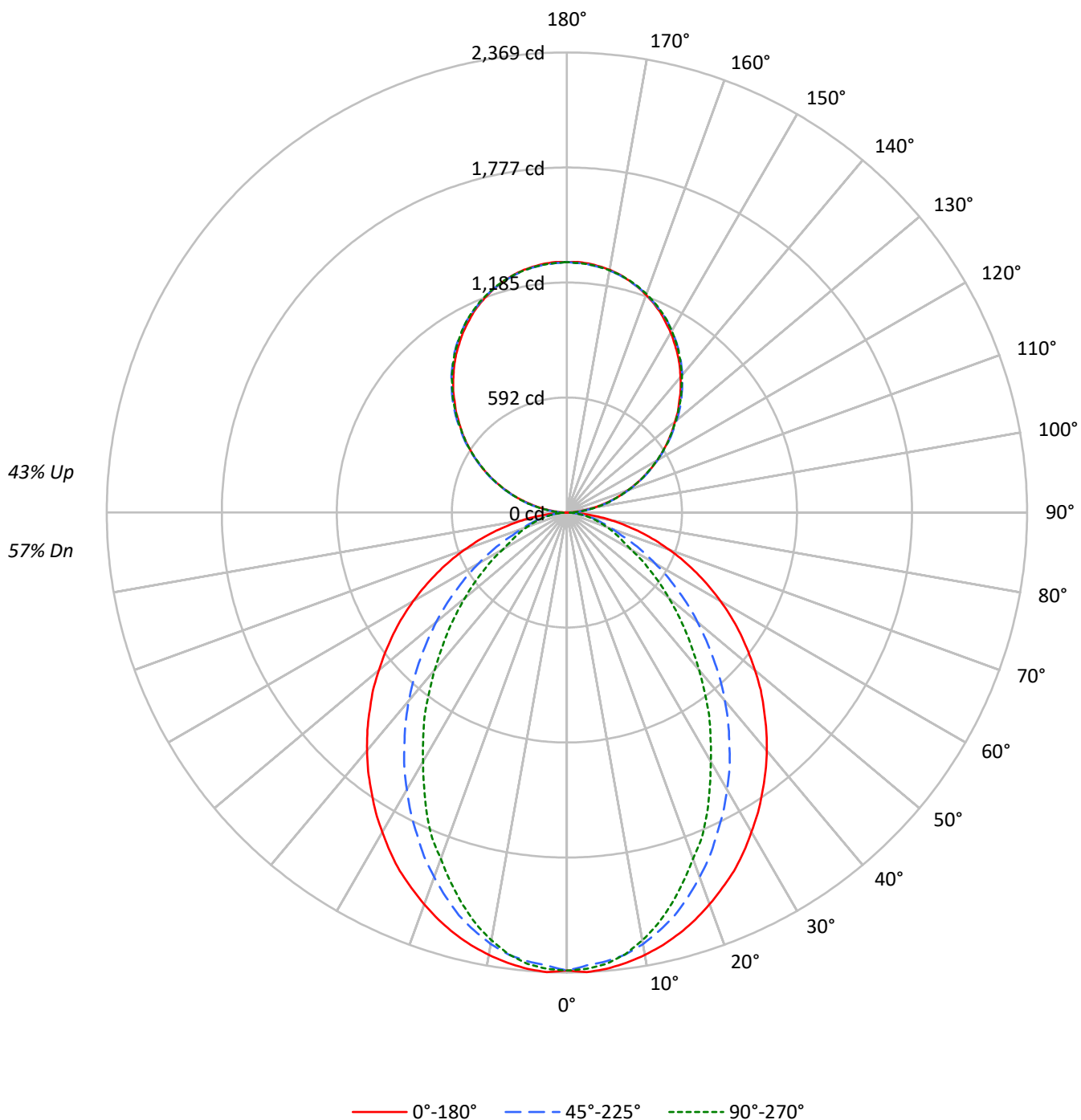
**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 8458.7 lumens  
Efficiency: N/A  
Efficacy: 81.1 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16  
Luminous Opening: Rectangular w/ Sides (W: 3.74' x L: 3.94' x H: 0.1')  
CIE Type: General Diffuse  
  
Input Watts (W): 104.3  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9789  
Total Harmonic Distortion (THDi): 0.074  
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   | 109 | 109 | 109 | 109 | 101 | 101 | 101 | 101 | 87 | 87 | 87 | 75 | 75 | 75 | 63 | 63 | 63 |
| 1   | 100 | 96  | 92  | 89  | 93  | 89  | 86  | 83  | 78 | 75 | 73 | 67 | 65 | 63 | 56 | 55 | 54 |
| 2   | 92  | 84  | 78  | 73  | 85  | 79  | 74  | 69  | 69 | 65 | 61 | 59 | 56 | 54 | 50 | 48 | 47 |
| 3   | 84  | 75  | 68  | 62  | 78  | 70  | 64  | 59  | 61 | 56 | 52 | 53 | 49 | 46 | 45 | 42 | 40 |
| 4   | 77  | 66  | 59  | 53  | 72  | 62  | 56  | 50  | 55 | 49 | 45 | 47 | 43 | 40 | 41 | 38 | 35 |
| 5   | 71  | 60  | 52  | 46  | 66  | 56  | 49  | 44  | 49 | 44 | 39 | 43 | 39 | 35 | 37 | 34 | 31 |
| 6   | 66  | 54  | 46  | 40  | 61  | 51  | 43  | 38  | 45 | 39 | 35 | 39 | 34 | 31 | 34 | 30 | 28 |
| 7   | 61  | 49  | 41  | 35  | 57  | 46  | 39  | 34  | 41 | 35 | 31 | 36 | 31 | 28 | 31 | 27 | 25 |
| 8   | 57  | 44  | 37  | 32  | 53  | 42  | 35  | 30  | 37 | 32 | 28 | 33 | 28 | 25 | 29 | 25 | 22 |
| 9   | 53  | 41  | 33  | 28  | 49  | 38  | 32  | 27  | 34 | 29 | 25 | 30 | 26 | 23 | 26 | 23 | 20 |
| 10  | 49  | 37  | 30  | 26  | 46  | 35  | 29  | 25  | 32 | 26 | 23 | 28 | 24 | 21 | 25 | 21 | 19 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 1722 | 1722 | 1722 |
| 5°  | 1724 | 1695 | 1706 |
| 10° | 1707 | 1662 | 1650 |
| 15° | 1684 | 1607 | 1565 |
| 20° | 1653 | 1532 | 1460 |
| 25° | 1621 | 1447 | 1358 |
| 30° | 1578 | 1360 | 1230 |
| 35° | 1536 | 1267 | 1117 |
| 40° | 1494 | 1170 | 987  |
| 45° | 1444 | 1063 | 869  |
| 50° | 1393 | 954  | 754  |
| 55° | 1339 | 839  | 644  |
| 60° | 1278 | 718  | 530  |
| 65° | 1206 | 595  | 478  |
| 70° | 1120 | 480  | 433  |
| 75° | 1012 | 423  | 394  |
| 80° | 855  | 356  | 343  |
| 85° | 595  | 239  | 260  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 1444 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 221.1  | 2.6       |
| 10°-20°   | 606.9  | 7.2       |
| 20°-30°   | 852.0  | 10.1      |
| 30°-40°   | 928.8  | 11.0      |
| 40°-50°   | 853.6  | 10.1      |
| 50°-60°   | 670.4  | 7.9       |
| 60°-70°   | 436.4  | 5.2       |
| 70°-80°   | 224.6  | 2.7       |
| 80°-90°   | 61.0   | 0.7       |
| 90°-100°  | 79.8   | 0.9       |
| 100°-110° | 253.5  | 3.0       |
| 110°-120° | 433.8  | 5.1       |
| 120°-130° | 570.5  | 6.7       |
| 130°-140° | 640.4  | 7.6       |
| 140°-150° | 627.9  | 7.4       |
| 150°-160° | 526.8  | 6.2       |
| 160°-170° | 349.3  | 4.1       |
| 170°-180° | 122.1  | 1.4       |
| 0°-30°    | 1679.9 | 19.9      |
| 0°-40°    | 2608.7 | 30.8      |
| 0°-60°    | 4132.7 | 48.9      |
| 0°-90°    | 4854.7 | 57.4      |
| 90°-120°  | 767.0  | 9.1       |
| 90°-150°  | 2605.8 | 30.8      |
| 90°-180°  | 3604.0 | 42.6      |
| 0°-180°   | 8458.7 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 2359 | 2359  | 2359 | 2359  | 2359 |      |
| 5°   | 2359 | 2348  | 2320 | 2340  | 2333 | 224  |
| 15°  | 2244 | 2220  | 2147 | 2107  | 2086 | 632  |
| 25°  | 2036 | 1968  | 1827 | 1740  | 1708 | 937  |
| 35°  | 1755 | 1646  | 1458 | 1324  | 1276 | 1098 |
| 45°  | 1434 | 1291  | 1067 | 916   | 864  | 1108 |
| 55°  | 1091 | 924   | 694  | 566   | 525  | 975  |
| 65°  | 736  | 564   | 371  | 299   | 292  | 730  |
| 75°  | 393  | 243   | 171  | 156   | 154  | 415  |
| 85°  | 92   | 47    | 40   | 40    | 40   | 105  |
| 90°  | 1    | 14    | 38   | 36    | 37   | 8    |
| 95°  | 57   | 68    | 70   | 70    | 68   | 63   |
| 105° | 234  | 237   | 240  | 241   | 241  | 247  |
| 115° | 435  | 442   | 440  | 438   | 435  | 431  |
| 125° | 633  | 643   | 640  | 636   | 635  | 566  |
| 135° | 819  | 831   | 833  | 832   | 829  | 633  |
| 145° | 994  | 1002  | 1008 | 1009  | 1005 | 621  |
| 155° | 1137 | 1140  | 1144 | 1149  | 1145 | 523  |
| 165° | 1237 | 1236  | 1236 | 1243  | 1238 | 349  |
| 175° | 1287 | 1284  | 1282 | 1289  | 1283 | 122  |
| 180° | 1289 | 1289  | 1289 | 1289  | 1289 |      |

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**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 2358.7 | 2358.7 | 2358.7 | 2358.7 | 2358.7 |
| 2.5°   | 2369.3 | 2358.7 | 2335.2 | 2356.7 | 2352.4 |
| 5°     | 2358.7 | 2348.1 | 2320.3 | 2339.5 | 2333.1 |
| 7.5°   | 2339.5 | 2326.8 | 2296.9 | 2305.3 | 2294.7 |
| 10°    | 2313.9 | 2299.0 | 2256.3 | 2249.8 | 2237.1 |
| 12.5°  | 2281.9 | 2262.7 | 2205.0 | 2192.3 | 2168.7 |
| 15°    | 2243.5 | 2219.9 | 2147.4 | 2106.9 | 2085.6 |
| 17.5°  | 2198.6 | 2164.5 | 2074.8 | 2027.8 | 1993.6 |
| 20°    | 2147.4 | 2104.6 | 1998.0 | 1944.7 | 1897.6 |
| 22.5°  | 2092.0 | 2042.8 | 1918.9 | 1846.4 | 1814.5 |
| 25°    | 2036.5 | 1968.0 | 1827.2 | 1739.8 | 1707.6 |
| 27.5°  | 1970.3 | 1897.6 | 1741.8 | 1641.5 | 1592.4 |
| 30°    | 1899.9 | 1818.6 | 1647.8 | 1539.1 | 1481.4 |
| 32.5°  | 1831.5 | 1733.2 | 1558.4 | 1430.2 | 1376.7 |
| 35°    | 1754.7 | 1645.8 | 1458.1 | 1323.6 | 1276.4 |
| 37.5°  | 1680.0 | 1562.4 | 1364.1 | 1216.6 | 1163.4 |
| 40°    | 1600.9 | 1473.0 | 1265.8 | 1114.3 | 1058.7 |
| 42.5°  | 1519.9 | 1383.3 | 1167.7 | 1009.6 | 956.4  |
| 45°    | 1434.5 | 1291.4 | 1067.4 | 915.7  | 864.5  |
| 47.5°  | 1353.4 | 1201.9 | 971.3  | 819.6  | 772.7  |
| 50°    | 1263.7 | 1112.2 | 877.3  | 729.9  | 685.3  |
| 52.5°  | 1176.1 | 1015.9 | 787.7  | 646.8  | 606.3  |
| 55°    | 1090.7 | 924.2  | 693.7  | 565.7  | 525.2  |
| 57.5°  | 1003.3 | 832.5  | 610.6  | 491.0  | 456.8  |
| 60°    | 913.6  | 742.8  | 522.9  | 414.3  | 380.0  |
| 62.5°  | 826.1  | 655.4  | 448.2  | 345.8  | 328.8  |
| 65°    | 736.5  | 563.5  | 371.4  | 299.0  | 292.4  |
| 67.5°  | 651.1  | 478.1  | 299.0  | 262.4  | 256.2  |
| 70°    | 561.4  | 394.9  | 247.5  | 226.2  | 217.6  |
| 72.5°  | 476.1  | 318.0  | 207.0  | 190.0  | 185.7  |
| 75°    | 392.7  | 243.2  | 170.7  | 155.8  | 153.8  |
| 77.5°  | 309.6  | 172.8  | 134.5  | 125.9  | 121.6  |
| 80°    | 232.6  | 123.8  | 102.4  | 94.0   | 94.0   |
| 82.5°  | 162.2  | 83.3   | 70.4   | 66.1   | 66.1   |
| 85°    | 91.7   | 46.9   | 40.5   | 40.5   | 40.5   |
| 87.5°  | 34.2   | 17.0   | 17.0   | 14.9   | 14.9   |
| 90°    | 1.1    | 14.0   | 38.1   | 35.8   | 36.9   |
| 92.5°  | 24.1   | 32.6   | 33.8   | 35.0   | 35.0   |
| 95°    | 56.7   | 67.7   | 69.5   | 69.5   | 67.7   |
| 97.5°  | 94.4   | 104.5  | 108.8  | 108.8  | 108.8  |
| 100°   | 137.9  | 146.9  | 150.0  | 150.0  | 148.9  |
| 102.5° | 183.8  | 190.5  | 194.7  | 195.9  | 194.7  |
| 105°   | 234.0  | 237.1  | 239.5  | 241.3  | 241.3  |
| 107.5° | 283.7  | 288.4  | 288.4  | 289.2  | 283.7  |
| 110°   | 331.9  | 338.2  | 338.2  | 338.2  | 335.0  |

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**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 384.0  | 390.6  | 389.5  | 386.4  | 384.0  |
| 115°   | 435.3  | 441.6  | 439.6  | 438.5  | 435.3  |
| 117.5° | 486.2  | 494.8  | 489.3  | 486.2  | 483.1  |
| 120°   | 537.5  | 546.1  | 537.5  | 537.5  | 534.0  |
| 122.5° | 584.2  | 595.1  | 589.6  | 586.5  | 584.2  |
| 125°   | 633.2  | 642.9  | 639.8  | 636.3  | 635.1  |
| 127.5° | 680.9  | 693.0  | 688.8  | 684.0  | 680.9  |
| 130°   | 725.7  | 739.6  | 737.7  | 735.4  | 731.1  |
| 132.5° | 775.8  | 786.7  | 787.5  | 782.0  | 778.9  |
| 135°   | 819.0  | 831.0  | 833.3  | 832.2  | 829.1  |
| 137.5° | 867.2  | 876.9  | 878.8  | 878.0  | 873.3  |
| 140°   | 909.5  | 919.2  | 924.6  | 924.6  | 920.4  |
| 142.5° | 953.0  | 962.8  | 965.9  | 967.0  | 962.8  |
| 145°   | 994.3  | 1002.0 | 1008.2 | 1009.4 | 1005.1 |
| 147.5° | 1031.2 | 1040.9 | 1045.5 | 1047.5 | 1043.2 |
| 150°   | 1069.3 | 1075.9 | 1080.1 | 1083.6 | 1080.1 |
| 152.5° | 1103.1 | 1109.7 | 1115.1 | 1119.4 | 1115.1 |
| 155°   | 1136.9 | 1140.0 | 1143.5 | 1148.9 | 1145.4 |
| 157.5° | 1166.0 | 1168.3 | 1170.3 | 1178.1 | 1172.6 |
| 160°   | 1192.0 | 1194.4 | 1195.6 | 1202.2 | 1197.5 |
| 162.5° | 1216.2 | 1216.2 | 1217.3 | 1224.7 | 1219.3 |
| 165°   | 1236.8 | 1235.6 | 1235.6 | 1243.4 | 1237.9 |
| 167.5° | 1255.4 | 1251.9 | 1251.9 | 1259.7 | 1254.3 |
| 170°   | 1269.4 | 1266.3 | 1265.2 | 1272.9 | 1266.3 |
| 172.5° | 1279.1 | 1276.0 | 1274.9 | 1282.6 | 1276.0 |
| 175°   | 1286.9 | 1283.8 | 1281.5 | 1289.2 | 1282.6 |
| 177.5° | 1291.2 | 1288.1 | 1285.7 | 1292.3 | 1285.7 |
| 180°   | 1289.2 | 1289.2 | 1289.2 | 1289.2 | 1289.2 |

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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 | 9.70             | 10.60 | 10.60 | 11.51 | 12.68 | 5.67           | 6.56 | 6.57  | 7.48  | 8.64  |
|                 | 3H   | 11.39            | 12.19 | 12.30 | 13.11 | 14.30 | 6.86           | 7.66 | 7.77  | 8.59  | 9.78  |
|                 | 4H   | 12.00            | 12.76 | 12.93 | 13.69 | 14.89 | 7.32           | 8.07 | 8.24  | 9.00  | 10.20 |
|                 | 6H   | 12.43            | 13.13 | 13.37 | 14.06 | 15.27 | 7.64           | 8.34 | 8.58  | 9.27  | 10.48 |
|                 | 8H   | 12.56            | 13.22 | 13.50 | 14.17 | 15.38 | 7.74           | 8.40 | 8.68  | 9.35  | 10.56 |
|                 | 12H  | 12.63            | 13.25 | 13.57 | 14.20 | 15.43 | 7.78           | 8.41 | 8.73  | 9.35  | 10.59 |
| 4H              | 2H   | 9.73             | 10.49 | 10.66 | 11.41 | 12.61 | 6.27           | 7.03 | 7.21  | 7.96  | 9.16  |
|                 | 3H   | 11.57            | 12.20 | 12.51 | 13.15 | 14.37 | 7.63           | 8.26 | 8.57  | 9.22  | 10.43 |
|                 | 4H   | 12.27            | 12.84 | 13.22 | 13.79 | 15.03 | 8.18           | 8.75 | 9.13  | 9.71  | 10.95 |
|                 | 6H   | 12.79            | 13.28 | 13.75 | 14.26 | 15.49 | 8.61           | 9.10 | 9.57  | 10.07 | 11.31 |
|                 | 8H   | 12.97            | 13.42 | 13.93 | 14.39 | 15.65 | 8.74           | 9.20 | 9.70  | 10.17 | 11.42 |
|                 | 12H  | 13.06            | 13.48 | 14.05 | 14.47 | 15.72 | 8.81           | 9.22 | 9.79  | 10.21 | 11.46 |
| 8H              | 4H   | 12.24            | 12.70 | 13.20 | 13.67 | 14.92 | 8.47           | 8.93 | 9.43  | 9.90  | 11.15 |
|                 | 6H   | 12.81            | 13.19 | 13.80 | 14.20 | 15.45 | 8.99           | 9.37 | 9.98  | 10.38 | 11.63 |
|                 | 8H   | 13.03            | 13.36 | 14.03 | 14.36 | 15.63 | 9.18           | 9.52 | 10.18 | 10.52 | 11.79 |
|                 | 12H  | 13.17            | 13.47 | 14.17 | 14.46 | 15.78 | 9.31           | 9.60 | 10.31 | 10.59 | 11.91 |
| 12H             | 4H   | 12.19            | 12.61 | 13.18 | 13.59 | 14.85 | 8.48           | 8.89 | 9.46  | 9.88  | 11.14 |
|                 | 6H   | 12.79            | 13.12 | 13.78 | 14.12 | 15.39 | 9.04           | 9.38 | 10.04 | 10.38 | 11.65 |
|                 | 8H   | 13.01            | 13.31 | 14.01 | 14.30 | 15.62 | 9.26           | 9.55 | 10.26 | 10.54 | 11.86 |

END OF REPORT