

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: P917170

Luminaire Tested: DFN2DIP-SQ2F0-050D060US930-RLLFLL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P917170  
REPORT IS A COMBINATION OF REPORTS P899812 AND P896659  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-SQ2F0-050D060US930-RLLFLL  
Description: 2 foot, Square Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

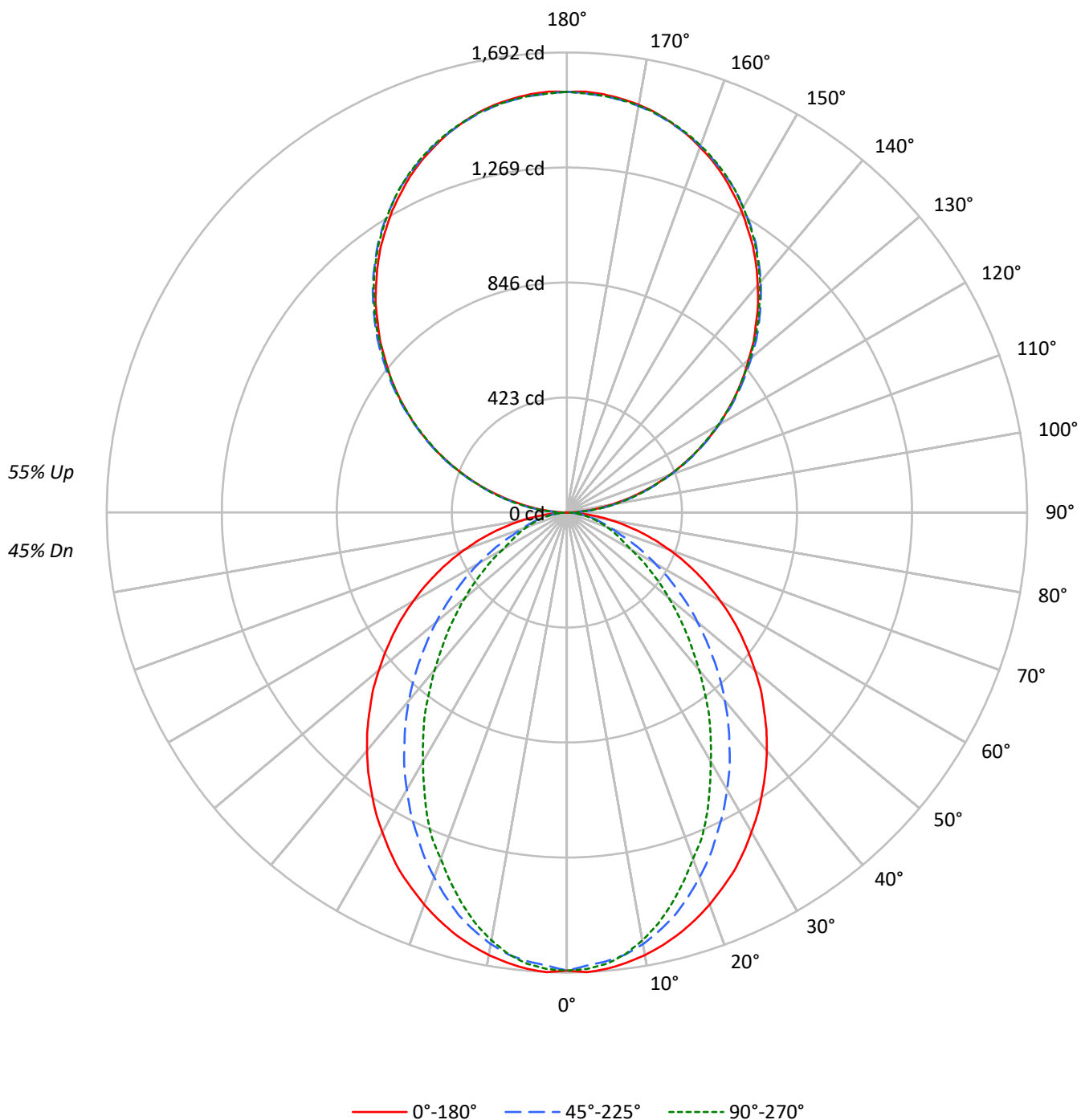
**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 7794.2 lumens  
Efficiency: N/A  
Efficacy: 86.5 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16  
Luminous Opening: Rectangular w/ Sides (W: 2.21' x L: 2.21' x H: 0.1')  
CIE Type: General Diffuse  
  
Input Watts (W): 90.1  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.996  
Total Harmonic Distortion (THDi): 0.064  
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



TEST NUMBER: P917170

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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   | 106 | 106 | 106 | 106 | 97 | 97 | 97 | 97 | 80 | 80 | 80 | 65 | 65 | 65 | 51 | 51 | 51 |
| 1   | 97  | 93  | 89  | 86  | 89 | 85 | 82 | 79 | 71 | 69 | 67 | 58 | 56 | 55 | 46 | 45 | 44 |
| 2   | 89  | 82  | 76  | 71  | 81 | 75 | 70 | 66 | 63 | 59 | 56 | 51 | 49 | 47 | 41 | 39 | 38 |
| 3   | 81  | 72  | 65  | 59  | 74 | 66 | 60 | 55 | 56 | 51 | 47 | 46 | 43 | 40 | 37 | 34 | 33 |
| 4   | 74  | 64  | 56  | 51  | 68 | 59 | 52 | 47 | 50 | 45 | 41 | 41 | 37 | 35 | 33 | 30 | 28 |
| 5   | 68  | 57  | 49  | 44  | 63 | 53 | 46 | 41 | 45 | 39 | 35 | 37 | 33 | 30 | 30 | 27 | 25 |
| 6   | 63  | 51  | 44  | 38  | 58 | 48 | 41 | 36 | 40 | 35 | 31 | 34 | 30 | 27 | 27 | 24 | 22 |
| 7   | 58  | 47  | 39  | 33  | 54 | 43 | 36 | 31 | 37 | 31 | 28 | 31 | 27 | 24 | 25 | 22 | 20 |
| 8   | 54  | 42  | 35  | 30  | 50 | 39 | 33 | 28 | 34 | 28 | 25 | 28 | 24 | 21 | 23 | 20 | 18 |
| 9   | 51  | 39  | 31  | 27  | 46 | 36 | 29 | 25 | 31 | 26 | 22 | 26 | 22 | 19 | 21 | 18 | 16 |
| 10  | 47  | 36  | 29  | 24  | 43 | 33 | 27 | 23 | 28 | 23 | 20 | 24 | 20 | 17 | 20 | 17 | 15 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 3705 | 3705 | 3705 |
| 5°  | 3704 | 3638 | 3664 |
| 10° | 3661 | 3559 | 3540 |
| 15° | 3604 | 3433 | 3351 |
| 20° | 3531 | 3264 | 3120 |
| 25° | 3456 | 3075 | 2898 |
| 30° | 3358 | 2882 | 2618 |
| 35° | 3261 | 2676 | 2372 |
| 40° | 3162 | 2463 | 2092 |
| 45° | 3049 | 2228 | 1837 |
| 50° | 2930 | 1992 | 1589 |
| 55° | 2806 | 1741 | 1351 |
| 60° | 2662 | 1479 | 1107 |
| 65° | 2495 | 1214 | 991  |
| 70° | 2293 | 967  | 889  |
| 75° | 2039 | 837  | 798  |
| 80° | 1675 | 679  | 676  |
| 85° | 1090 | 421  | 481  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
Vertical Angle: 45°  
Luminance: 3049 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 157.9  | 2.0       |
| 10°-20°   | 433.5  | 5.6       |
| 20°-30°   | 608.6  | 7.8       |
| 30°-40°   | 663.4  | 8.5       |
| 40°-50°   | 609.7  | 7.8       |
| 50°-60°   | 478.8  | 6.1       |
| 60°-70°   | 311.7  | 4.0       |
| 70°-80°   | 160.4  | 2.1       |
| 80°-90°   | 45.3   | 0.6       |
| 90°-100°  | 95.7   | 1.2       |
| 100°-110° | 304.2  | 3.9       |
| 110°-120° | 520.6  | 6.7       |
| 120°-130° | 684.6  | 8.8       |
| 130°-140° | 768.4  | 9.9       |
| 140°-150° | 753.5  | 9.7       |
| 150°-160° | 632.1  | 8.1       |
| 160°-170° | 419.2  | 5.4       |
| 170°-180° | 146.5  | 1.9       |
| 0°-30°    | 1200.0 | 15.4      |
| 0°-40°    | 1863.4 | 23.9      |
| 0°-60°    | 2951.9 | 37.9      |
| 0°-90°    | 3469.4 | 44.5      |
| 90°-120°  | 920.5  | 11.8      |
| 90°-150°  | 3127.0 | 40.1      |
| 90°-180°  | 4325.0 | 55.5      |
| 0°-180°   | 7794.2 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 1685 | 1685  | 1685 | 1685  | 1685 |      |
| 5°   | 1685 | 1677  | 1657 | 1671  | 1667 | 160  |
| 15°  | 1602 | 1586  | 1534 | 1505  | 1490 | 452  |
| 25°  | 1455 | 1406  | 1305 | 1243  | 1220 | 669  |
| 35°  | 1253 | 1176  | 1042 | 945   | 912  | 784  |
| 45°  | 1025 | 922   | 762  | 654   | 617  | 791  |
| 55°  | 779  | 660   | 496  | 404   | 375  | 696  |
| 65°  | 526  | 402   | 265  | 214   | 209  | 521  |
| 75°  | 280  | 174   | 122  | 111   | 110  | 297  |
| 85°  | 66   | 34    | 29   | 29    | 29   | 75   |
| 90°  | 1    | 17    | 46   | 43    | 44   | 8    |
| 95°  | 68   | 81    | 84   | 84    | 81   | 76   |
| 105° | 281  | 284   | 287  | 290   | 290  | 296  |
| 115° | 522  | 530   | 528  | 526   | 522  | 517  |
| 125° | 760  | 771   | 768  | 764   | 762  | 679  |
| 135° | 983  | 997   | 1000 | 999   | 995  | 760  |
| 145° | 1193 | 1202  | 1210 | 1211  | 1206 | 745  |
| 155° | 1364 | 1368  | 1372 | 1379  | 1374 | 628  |
| 165° | 1484 | 1483  | 1483 | 1492  | 1486 | 419  |
| 175° | 1544 | 1541  | 1538 | 1547  | 1539 | 147  |
| 180° | 1547 | 1547  | 1547 | 1547  | 1547 |      |

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**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 1684.8 | 1684.8 | 1684.8 | 1684.8 | 1684.8 |
| 2.5°   | 1692.4 | 1684.8 | 1668.0 | 1683.3 | 1680.2 |
| 5°     | 1684.8 | 1677.2 | 1657.3 | 1671.0 | 1666.6 |
| 7.5°   | 1671.0 | 1662.0 | 1640.6 | 1646.7 | 1639.0 |
| 10°    | 1652.8 | 1642.1 | 1611.7 | 1607.0 | 1597.9 |
| 12.5°  | 1629.9 | 1616.2 | 1575.0 | 1565.9 | 1549.1 |
| 15°    | 1602.5 | 1585.7 | 1533.9 | 1505.0 | 1489.7 |
| 17.5°  | 1570.4 | 1546.1 | 1482.0 | 1448.5 | 1424.0 |
| 20°    | 1533.9 | 1503.3 | 1427.1 | 1389.1 | 1355.4 |
| 22.5°  | 1494.3 | 1459.1 | 1370.7 | 1318.9 | 1296.1 |
| 25°    | 1454.6 | 1405.7 | 1305.1 | 1242.7 | 1219.7 |
| 27.5°  | 1407.4 | 1355.4 | 1244.1 | 1172.5 | 1137.4 |
| 30°    | 1357.1 | 1299.0 | 1177.0 | 1099.3 | 1058.1 |
| 32.5°  | 1308.2 | 1238.0 | 1113.1 | 1021.6 | 983.4  |
| 35°    | 1253.4 | 1175.6 | 1041.5 | 945.3  | 911.7  |
| 37.5°  | 1200.0 | 1116.1 | 974.4  | 869.0  | 831.0  |
| 40°    | 1143.5 | 1052.1 | 904.1  | 795.9  | 756.3  |
| 42.5°  | 1085.7 | 988.1  | 834.1  | 721.1  | 683.1  |
| 45°    | 1024.7 | 922.4  | 762.4  | 654.0  | 617.4  |
| 47.5°  | 966.7  | 858.5  | 693.8  | 585.5  | 552.0  |
| 50°    | 902.7  | 794.4  | 626.7  | 521.4  | 489.5  |
| 52.5°  | 840.1  | 725.7  | 562.6  | 462.0  | 433.1  |
| 55°    | 779.1  | 660.1  | 495.5  | 404.1  | 375.1  |
| 57.5°  | 716.6  | 594.7  | 436.1  | 350.7  | 326.3  |
| 60°    | 652.6  | 530.6  | 373.5  | 295.9  | 271.4  |
| 62.5°  | 590.1  | 468.1  | 320.2  | 247.0  | 234.9  |
| 65°    | 526.0  | 402.5  | 265.3  | 213.5  | 208.9  |
| 67.5°  | 465.0  | 341.5  | 213.5  | 187.5  | 183.0  |
| 70°    | 401.0  | 282.1  | 176.8  | 161.6  | 155.5  |
| 72.5°  | 340.1  | 227.1  | 147.9  | 135.7  | 132.6  |
| 75°    | 280.5  | 173.7  | 122.0  | 111.3  | 109.8  |
| 77.5°  | 221.1  | 123.4  | 96.1   | 89.9   | 86.8   |
| 80°    | 166.2  | 88.5   | 73.1   | 67.1   | 67.1   |
| 82.5°  | 115.9  | 59.5   | 50.3   | 47.2   | 47.2   |
| 85°    | 65.5   | 33.5   | 28.9   | 28.9   | 28.9   |
| 87.5°  | 24.5   | 12.1   | 12.1   | 10.7   | 10.7   |
| 90°    | 1.4    | 16.8   | 45.7   | 42.9   | 44.3   |
| 92.5°  | 28.9   | 39.2   | 40.6   | 42.0   | 42.0   |
| 95°    | 68.1   | 81.1   | 83.5   | 83.5   | 81.1   |
| 97.5°  | 113.3  | 125.5  | 130.6  | 130.6  | 130.6  |
| 100°   | 165.6  | 176.3  | 180.0  | 180.0  | 178.6  |
| 102.5° | 220.6  | 228.5  | 233.7  | 235.1  | 233.7  |
| 105°   | 280.8  | 284.5  | 287.3  | 289.7  | 289.7  |
| 107.5° | 340.5  | 346.1  | 346.1  | 347.0  | 340.5  |
| 110°   | 398.4  | 405.8  | 405.8  | 405.8  | 402.0  |

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**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 460.8  | 468.7  | 467.3  | 463.6  | 460.8  |
| 115°   | 522.4  | 529.9  | 527.5  | 526.1  | 522.4  |
| 117.5° | 583.5  | 593.8  | 587.2  | 583.5  | 579.8  |
| 120°   | 645.1  | 655.3  | 645.1  | 645.1  | 640.8  |
| 122.5° | 701.0  | 714.0  | 707.5  | 703.8  | 701.0  |
| 125°   | 759.8  | 771.4  | 767.7  | 763.5  | 762.1  |
| 127.5° | 817.2  | 831.6  | 826.5  | 820.9  | 817.2  |
| 130°   | 870.8  | 887.6  | 885.3  | 882.5  | 877.3  |
| 132.5° | 931.0  | 944.0  | 944.9  | 938.4  | 934.7  |
| 135°   | 982.8  | 997.2  | 1000.0 | 998.6  | 994.8  |
| 137.5° | 1040.6 | 1052.2 | 1054.6 | 1053.6 | 1048.1 |
| 140°   | 1091.4 | 1103.1 | 1109.6 | 1109.6 | 1104.5 |
| 142.5° | 1143.6 | 1155.3 | 1159.0 | 1160.4 | 1155.3 |
| 145°   | 1193.1 | 1202.4 | 1209.9 | 1211.3 | 1206.2 |
| 147.5° | 1237.4 | 1249.0 | 1254.7 | 1256.9 | 1251.8 |
| 150°   | 1283.1 | 1291.0 | 1296.2 | 1300.3 | 1296.2 |
| 152.5° | 1323.6 | 1331.6 | 1338.1 | 1343.3 | 1338.1 |
| 155°   | 1364.2 | 1368.0 | 1372.1 | 1378.8 | 1374.5 |
| 157.5° | 1399.2 | 1402.1 | 1404.4 | 1413.7 | 1407.2 |
| 160°   | 1430.5 | 1433.3 | 1434.7 | 1442.6 | 1437.0 |
| 162.5° | 1459.4 | 1459.4 | 1460.8 | 1469.7 | 1463.1 |
| 165°   | 1484.1 | 1482.7 | 1482.7 | 1492.1 | 1485.6 |
| 167.5° | 1506.5 | 1502.4 | 1502.4 | 1511.6 | 1505.1 |
| 170°   | 1523.3 | 1519.6 | 1518.2 | 1527.5 | 1519.6 |
| 172.5° | 1535.0 | 1531.2 | 1529.8 | 1539.1 | 1531.2 |
| 175°   | 1544.3 | 1540.6 | 1537.7 | 1547.1 | 1539.1 |
| 177.5° | 1549.4 | 1545.7 | 1542.9 | 1550.8 | 1542.9 |
| 180°   | 1547.1 | 1547.1 | 1547.1 | 1547.1 | 1547.1 |

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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 | 11.05            | 11.83 | 12.05 | 12.85 | 14.20 | 7.01           | 7.79  | 8.01  | 8.81  | 10.16 |
|                 | 3H   | 12.70            | 13.40 | 13.72 | 14.43 | 15.80 | 8.17           | 8.88  | 9.19  | 9.90  | 11.27 |
|                 | 4H   | 13.29            | 13.96 | 14.33 | 14.99 | 16.36 | 8.61           | 9.27  | 9.64  | 10.30 | 11.68 |
|                 | 6H   | 13.70            | 14.31 | 14.74 | 15.34 | 16.73 | 8.91           | 9.52  | 9.95  | 10.55 | 11.94 |
|                 | 8H   | 13.81            | 14.40 | 14.86 | 15.44 | 16.83 | 8.99           | 9.57  | 10.04 | 10.62 | 12.01 |
|                 | 12H  | 13.87            | 14.42 | 14.92 | 15.46 | 16.87 | 9.02           | 9.58  | 10.08 | 10.62 | 12.03 |
| 4H              | 2H   | 11.05            | 11.72 | 12.09 | 12.75 | 14.12 | 7.59           | 8.25  | 8.62  | 9.28  | 10.66 |
|                 | 3H   | 12.86            | 13.41 | 13.90 | 14.46 | 15.86 | 8.91           | 9.46  | 9.96  | 10.52 | 11.91 |
|                 | 4H   | 13.53            | 14.04 | 14.58 | 15.08 | 16.50 | 9.44           | 9.95  | 10.49 | 10.99 | 12.41 |
|                 | 6H   | 14.03            | 14.46 | 15.09 | 15.53 | 16.94 | 9.84           | 10.27 | 10.90 | 11.34 | 12.75 |
|                 | 8H   | 14.19            | 14.59 | 15.25 | 15.66 | 17.08 | 9.96           | 10.36 | 11.02 | 11.42 | 12.85 |
|                 | 12H  | 14.27            | 14.64 | 15.35 | 15.71 | 17.14 | 10.01          | 10.37 | 11.09 | 11.45 | 12.88 |
| 8H              | 4H   | 13.49            | 13.90 | 14.55 | 14.96 | 16.38 | 9.71           | 10.11 | 10.77 | 11.17 | 12.60 |
|                 | 6H   | 14.03            | 14.37 | 15.12 | 15.47 | 16.89 | 10.20          | 10.53 | 11.28 | 11.64 | 13.06 |
|                 | 8H   | 14.24            | 14.53 | 15.33 | 15.62 | 17.06 | 10.37          | 10.67 | 11.47 | 11.76 | 13.20 |
|                 | 12H  | 14.36            | 14.62 | 15.46 | 15.70 | 17.18 | 10.48          | 10.74 | 11.57 | 11.82 | 13.30 |
| 12H             | 4H   | 13.44            | 13.81 | 14.52 | 14.88 | 16.31 | 9.71           | 10.07 | 10.79 | 11.15 | 12.58 |
|                 | 6H   | 14.01            | 14.30 | 15.10 | 15.39 | 16.83 | 10.24          | 10.54 | 11.33 | 11.62 | 13.06 |
|                 | 8H   | 14.21            | 14.47 | 15.31 | 15.55 | 17.03 | 10.43          | 10.69 | 11.53 | 11.78 | 13.26 |

END OF REPORT