

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: P915600

Luminaire Tested: DFN2DIP-TR4F0-080D040US927-RLLFLL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P915600  
REPORT IS A COMBINATION OF REPORTS P900378 AND P897293  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-TR4F0-080D040US927-RLLFLL  
Description: 4 foot, Triangle Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

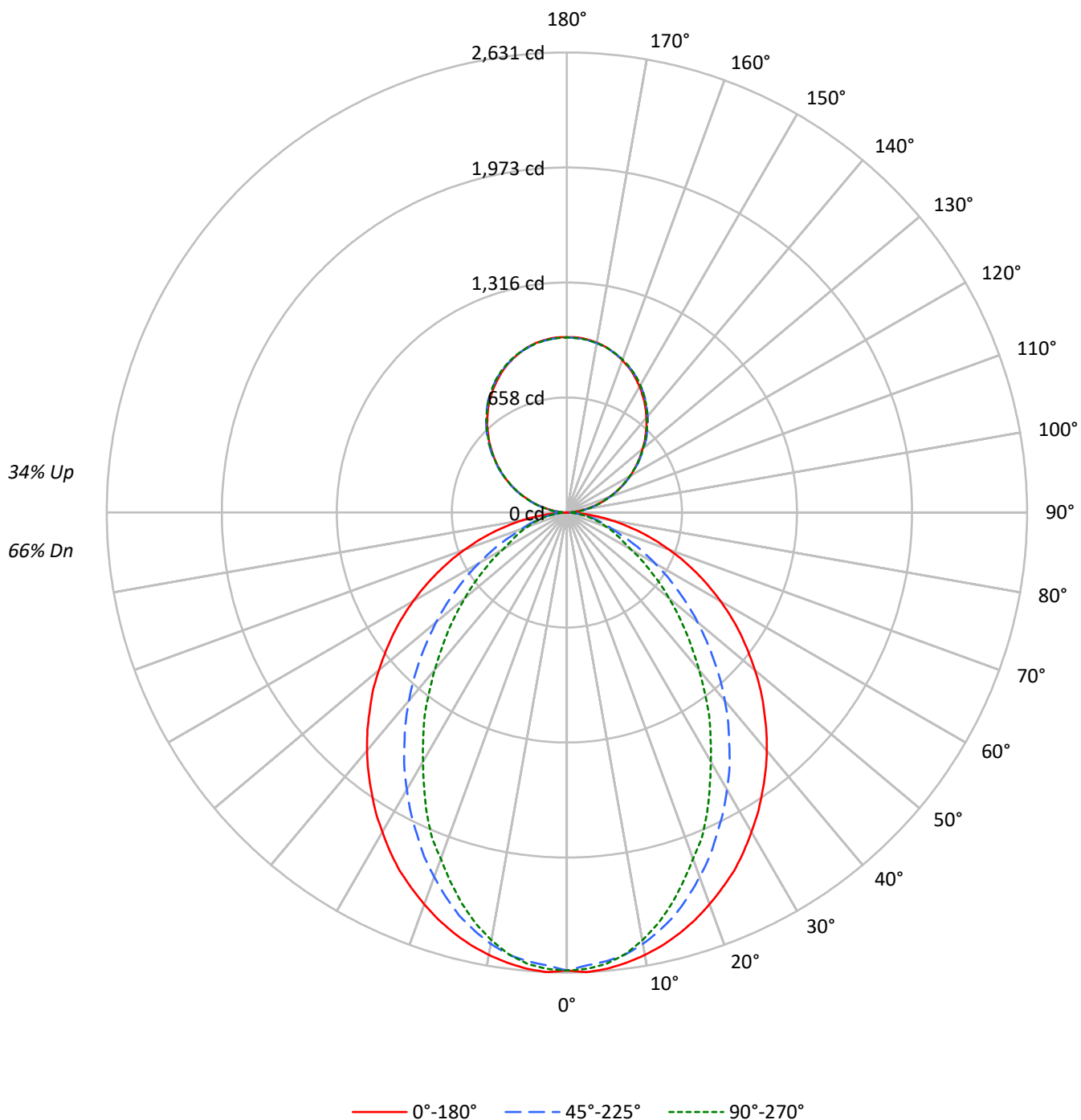
Lumens per Lamp: N/A  
Luminaire Lumens: 8191.1 lumens  
Efficiency: N/A  
Efficacy: 77.7 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16  
Luminous Opening: Rectangular w/ Sides (W: 3.43' x L: 3.96' x H: 0.1')  
CIE Type: Semi-Direct

Input Watts (W): 105.4  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9957  
Total Harmonic Distortion (THDi): 0.049  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT

TEST NUMBER: P915600

CATALOG NUMBER: DFN2DIP-TR4F0-080D040US927-RLLFLL

### Luminous Intensity Polar Plot



TEST NUMBER: P915600

CATALOG NUMBER: DFN2DIP-TR4F0-080D040US927-RLLFLL

**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   | 111 | 111 | 111 | 111 | 104 | 104 | 104 | 104 | 92 | 92 | 92 | 81 | 81 | 81 | 71 | 71 | 71 |
| 1   | 102 | 98  | 94  | 91  | 96  | 92  | 89  | 86  | 82 | 79 | 77 | 72 | 70 | 69 | 63 | 62 | 61 |
| 2   | 93  | 86  | 80  | 75  | 88  | 81  | 76  | 72  | 72 | 68 | 65 | 64 | 61 | 58 | 57 | 54 | 52 |
| 3   | 86  | 76  | 69  | 63  | 80  | 72  | 66  | 61  | 65 | 59 | 55 | 57 | 53 | 50 | 51 | 48 | 45 |
| 4   | 79  | 68  | 60  | 54  | 74  | 65  | 58  | 52  | 58 | 52 | 48 | 52 | 47 | 44 | 46 | 42 | 40 |
| 5   | 73  | 61  | 53  | 47  | 68  | 58  | 51  | 45  | 52 | 46 | 42 | 47 | 42 | 38 | 42 | 38 | 35 |
| 6   | 67  | 55  | 47  | 41  | 63  | 52  | 45  | 40  | 47 | 41 | 37 | 42 | 38 | 34 | 38 | 34 | 31 |
| 7   | 62  | 50  | 42  | 37  | 59  | 48  | 40  | 35  | 43 | 37 | 33 | 39 | 34 | 30 | 35 | 31 | 28 |
| 8   | 58  | 46  | 38  | 33  | 55  | 44  | 37  | 32  | 40 | 34 | 29 | 36 | 31 | 27 | 32 | 28 | 25 |
| 9   | 54  | 42  | 35  | 29  | 51  | 40  | 33  | 29  | 36 | 31 | 27 | 33 | 28 | 25 | 30 | 26 | 23 |
| 10  | 51  | 39  | 31  | 27  | 48  | 37  | 30  | 26  | 34 | 28 | 24 | 31 | 26 | 23 | 28 | 24 | 21 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 2081 | 2081 | 2081 |
| 5°  | 2084 | 2048 | 2061 |
| 10° | 2064 | 2008 | 1994 |
| 15° | 2035 | 1941 | 1890 |
| 20° | 1998 | 1850 | 1763 |
| 25° | 1959 | 1747 | 1640 |
| 30° | 1907 | 1642 | 1484 |
| 35° | 1857 | 1529 | 1347 |
| 40° | 1805 | 1412 | 1190 |
| 45° | 1745 | 1282 | 1048 |
| 50° | 1684 | 1151 | 909  |
| 55° | 1619 | 1011 | 775  |
| 60° | 1544 | 865  | 638  |
| 65° | 1458 | 716  | 574  |
| 70° | 1354 | 577  | 520  |
| 75° | 1223 | 509  | 473  |
| 80° | 1034 | 427  | 409  |
| 85° | 721  | 285  | 308  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 1745 cd/sqm

TEST NUMBER: P915600

CATALOG NUMBER: DFN2DIP-TR4F0-080D040US927-RLLFLL

**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 245.5  | 3.0       |
| 10°-20°   | 673.9  | 8.2       |
| 20°-30°   | 946.1  | 11.6      |
| 30°-40°   | 1031.3 | 12.6      |
| 40°-50°   | 947.9  | 11.6      |
| 50°-60°   | 744.4  | 9.1       |
| 60°-70°   | 484.5  | 5.9       |
| 70°-80°   | 249.4  | 3.0       |
| 80°-90°   | 66.5   | 0.8       |
| 90°-100°  | 62.0   | 0.8       |
| 100°-110° | 197.0  | 2.4       |
| 110°-120° | 337.2  | 4.1       |
| 120°-130° | 443.5  | 5.4       |
| 130°-140° | 497.8  | 6.1       |
| 140°-150° | 488.1  | 6.0       |
| 150°-160° | 409.5  | 5.0       |
| 160°-170° | 271.5  | 3.3       |
| 170°-180° | 94.9   | 1.2       |
| 0°-30°    | 1865.5 | 22.8      |
| 0°-40°    | 2896.8 | 35.4      |
| 0°-60°    | 4589.2 | 56.0      |
| 0°-90°    | 5389.7 | 65.8      |
| 90°-120°  | 596.2  | 7.3       |
| 90°-150°  | 2025.6 | 24.7      |
| 90°-180°  | 2801.0 | 34.2      |
| 0°-180°   | 8191.1 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 2619 | 2619  | 2619 | 2619  | 2619 |      |
| 5°   | 2619 | 2608  | 2576 | 2598  | 2591 | 248  |
| 15°  | 2491 | 2465  | 2385 | 2340  | 2316 | 702  |
| 25°  | 2261 | 2186  | 2029 | 1932  | 1896 | 1040 |
| 35°  | 1948 | 1828  | 1619 | 1470  | 1417 | 1220 |
| 45°  | 1593 | 1434  | 1185 | 1017  | 960  | 1230 |
| 55°  | 1211 | 1026  | 770  | 628   | 583  | 1082 |
| 65°  | 818  | 626   | 412  | 332   | 325  | 811  |
| 75°  | 436  | 270   | 190  | 173   | 171  | 461  |
| 85°  | 102  | 52    | 45   | 45    | 45   | 117  |
| 90°  | 1    | 11    | 30   | 28    | 29   | 8    |
| 95°  | 44   | 53    | 54   | 54    | 53   | 49   |
| 105° | 182  | 184   | 186  | 188   | 188  | 192  |
| 115° | 338  | 343   | 342  | 341   | 338  | 335  |
| 125° | 492  | 500   | 497  | 495   | 494  | 440  |
| 135° | 637  | 646   | 648  | 647   | 644  | 492  |
| 145° | 773  | 779   | 784  | 785   | 781  | 483  |
| 155° | 884  | 886   | 889  | 893   | 890  | 407  |
| 165° | 961  | 960   | 960  | 966   | 962  | 271  |
| 175° | 1000 | 998   | 996  | 1002  | 997  | 95   |
| 180° | 1002 | 1002  | 1002 | 1002  | 1002 |      |

TEST NUMBER: P915600

CATALOG NUMBER: DFN2DIP-TR4F0-080D040US927-RLLFLL

**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 2619.3 | 2619.3 | 2619.3 | 2619.3 | 2619.3 |
| 2.5°   | 2631.1 | 2619.3 | 2593.1 | 2617.0 | 2612.2 |
| 5°     | 2619.3 | 2607.5 | 2576.5 | 2597.9 | 2590.8 |
| 7.5°   | 2597.9 | 2583.8 | 2550.6 | 2559.9 | 2548.1 |
| 10°    | 2569.4 | 2552.9 | 2505.6 | 2498.3 | 2484.2 |
| 12.5°  | 2534.0 | 2512.6 | 2448.5 | 2434.4 | 2408.2 |
| 15°    | 2491.3 | 2465.1 | 2384.6 | 2339.6 | 2315.9 |
| 17.5°  | 2441.4 | 2403.5 | 2303.9 | 2251.9 | 2213.8 |
| 20°    | 2384.6 | 2337.1 | 2218.7 | 2159.6 | 2107.2 |
| 22.5°  | 2323.0 | 2268.4 | 2130.9 | 2050.4 | 2014.9 |
| 25°    | 2261.4 | 2185.5 | 2029.0 | 1932.0 | 1896.2 |
| 27.5°  | 2187.9 | 2107.2 | 1934.2 | 1822.8 | 1768.2 |
| 30°    | 2109.7 | 2019.4 | 1829.9 | 1709.1 | 1645.0 |
| 32.5°  | 2033.8 | 1924.7 | 1730.5 | 1588.2 | 1528.8 |
| 35°    | 1948.5 | 1827.6 | 1619.1 | 1469.7 | 1417.4 |
| 37.5°  | 1865.5 | 1735.0 | 1514.7 | 1351.0 | 1291.9 |
| 40°    | 1777.8 | 1635.7 | 1405.6 | 1237.3 | 1175.7 |
| 42.5°  | 1687.7 | 1536.1 | 1296.6 | 1121.2 | 1062.0 |
| 45°    | 1592.9 | 1434.0 | 1185.3 | 1016.8 | 960.0  |
| 47.5°  | 1502.9 | 1334.7 | 1078.6 | 910.1  | 858.1  |
| 50°    | 1403.3 | 1235.1 | 974.3  | 810.6  | 761.0  |
| 52.5°  | 1306.0 | 1128.1 | 874.6  | 718.3  | 673.3  |
| 55°    | 1211.2 | 1026.3 | 770.3  | 628.2  | 583.2  |
| 57.5°  | 1114.1 | 924.5  | 678.0  | 545.3  | 507.2  |
| 60°    | 1014.5 | 824.9  | 580.7  | 459.9  | 422.0  |
| 62.5°  | 917.4  | 727.8  | 497.7  | 384.0  | 365.2  |
| 65°    | 817.8  | 625.7  | 412.4  | 332.0  | 324.6  |
| 67.5°  | 723.0  | 530.9  | 332.0  | 291.4  | 284.5  |
| 70°    | 623.4  | 438.6  | 274.9  | 251.2  | 241.7  |
| 72.5°  | 528.6  | 353.1  | 229.9  | 211.0  | 206.2  |
| 75°    | 436.1  | 270.1  | 189.6  | 173.0  | 170.8  |
| 77.5°  | 343.8  | 191.9  | 149.4  | 139.8  | 135.1  |
| 80°    | 258.3  | 137.6  | 113.7  | 104.3  | 104.3  |
| 82.5°  | 180.1  | 92.5   | 78.2   | 73.4   | 73.4   |
| 85°    | 101.9  | 52.0   | 45.0   | 45.0   | 45.0   |
| 87.5°  | 37.9   | 18.9   | 18.9   | 16.6   | 16.6   |
| 90°    | 0.9    | 10.9   | 29.6   | 27.8   | 28.7   |
| 92.5°  | 18.7   | 25.3   | 26.3   | 27.2   | 27.2   |
| 95°    | 44.1   | 52.6   | 54.1   | 54.1   | 52.6   |
| 97.5°  | 73.4   | 81.3   | 84.6   | 84.6   | 84.6   |
| 100°   | 107.3  | 114.2  | 116.6  | 116.6  | 115.7  |
| 102.5° | 142.9  | 148.1  | 151.4  | 152.3  | 151.4  |
| 105°   | 181.9  | 184.3  | 186.1  | 187.6  | 187.6  |
| 107.5° | 220.5  | 224.2  | 224.2  | 224.7  | 220.5  |
| 110°   | 258.0  | 262.8  | 262.8  | 262.8  | 260.5  |

TEST NUMBER: P915600

CATALOG NUMBER: DFN2DIP-TR4F0-080D040US927-RLLFLL

**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 298.5  | 303.6  | 302.7  | 300.3  | 298.5  |
| 115°   | 338.3  | 343.3  | 341.7  | 340.8  | 338.3  |
| 117.5° | 377.9  | 384.6  | 380.4  | 377.9  | 375.6  |
| 120°   | 417.9  | 424.5  | 417.9  | 417.9  | 415.1  |
| 122.5° | 454.1  | 462.6  | 458.4  | 455.9  | 454.1  |
| 125°   | 492.2  | 499.7  | 497.3  | 494.6  | 493.7  |
| 127.5° | 529.3  | 538.7  | 535.4  | 531.7  | 529.3  |
| 130°   | 564.0  | 575.0  | 573.5  | 571.6  | 568.3  |
| 132.5° | 603.0  | 611.5  | 612.1  | 607.8  | 605.5  |
| 135°   | 636.6  | 645.9  | 647.8  | 646.8  | 644.4  |
| 137.5° | 674.1  | 681.6  | 683.1  | 682.5  | 678.9  |
| 140°   | 706.9  | 714.5  | 718.7  | 718.7  | 715.4  |
| 142.5° | 740.8  | 748.4  | 750.8  | 751.7  | 748.4  |
| 145°   | 772.9  | 778.9  | 783.7  | 784.7  | 781.3  |
| 147.5° | 801.5  | 809.1  | 812.7  | 814.2  | 810.9  |
| 150°   | 831.2  | 836.3  | 839.6  | 842.3  | 839.6  |
| 152.5° | 857.5  | 862.5  | 866.8  | 870.1  | 866.8  |
| 155°   | 883.7  | 886.1  | 888.8  | 893.1  | 890.3  |
| 157.5° | 906.4  | 908.2  | 909.7  | 915.8  | 911.5  |
| 160°   | 926.6  | 928.4  | 929.3  | 934.5  | 930.8  |
| 162.5° | 945.3  | 945.3  | 946.3  | 952.0  | 947.8  |
| 165°   | 961.4  | 960.4  | 960.4  | 966.5  | 962.3  |
| 167.5° | 975.9  | 973.1  | 973.1  | 979.2  | 974.9  |
| 170°   | 986.7  | 984.3  | 983.4  | 989.4  | 984.3  |
| 172.5° | 994.3  | 991.9  | 990.9  | 997.0  | 991.9  |
| 175°   | 1000.4 | 997.9  | 996.1  | 1002.1 | 997.0  |
| 177.5° | 1003.7 | 1001.2 | 999.4  | 1004.6 | 999.4  |
| 180°   | 1002.1 | 1002.1 | 1002.1 | 1002.1 | 1002.1 |

TEST NUMBER: P915600

CATALOG NUMBER: DFN2DIP-TR4F0-080D040US927-RLLFLL

**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            | 12.03 | 11.86 | 12.86 | 13.89 | 7.02           | 8.00  | 7.84  | 8.83  | 9.86  |
|                 | 3H   | 12.74            | 13.61 | 13.57 | 14.45 | 15.51 | 8.22           | 9.10  | 9.05  | 9.94  | 11.00 |
|                 | 4H   | 13.35            | 14.18 | 14.20 | 15.03 | 16.10 | 8.68           | 9.51  | 9.53  | 10.36 | 11.42 |
|                 | 6H   | 13.78            | 14.54 | 14.64 | 15.40 | 16.48 | 9.01           | 9.77  | 9.87  | 10.63 | 11.71 |
|                 | 8H   | 13.91            | 14.63 | 14.78 | 15.51 | 16.59 | 9.10           | 9.83  | 9.97  | 10.70 | 11.78 |
|                 | 12H  | 13.98            | 14.67 | 14.85 | 15.54 | 16.64 | 9.15           | 9.84  | 10.03 | 10.71 | 11.82 |
| 4H              | 2H   | 11.08            | 11.91 | 11.93 | 12.76 | 13.83 | 7.64           | 8.46  | 8.49  | 9.31  | 10.38 |
|                 | 3H   | 12.93            | 13.61 | 13.79 | 14.50 | 15.58 | 9.00           | 9.68  | 9.86  | 10.57 | 11.65 |
|                 | 4H   | 13.62            | 14.25 | 14.50 | 15.13 | 16.24 | 9.55           | 10.18 | 10.43 | 11.06 | 12.17 |
|                 | 6H   | 14.15            | 14.68 | 15.04 | 15.59 | 16.70 | 9.98           | 10.52 | 10.87 | 11.42 | 12.54 |
|                 | 8H   | 14.33            | 14.83 | 15.22 | 15.73 | 16.85 | 10.11          | 10.62 | 11.01 | 11.51 | 12.64 |
|                 | 12H  | 14.43            | 14.88 | 15.34 | 15.80 | 16.93 | 10.19          | 10.64 | 11.10 | 11.56 | 12.69 |
| 8H              | 4H   | 13.60            | 14.10 | 14.50 | 15.00 | 16.13 | 9.84           | 10.35 | 10.74 | 11.25 | 12.37 |
|                 | 6H   | 14.17            | 14.59 | 15.09 | 15.53 | 16.66 | 10.37          | 10.78 | 11.29 | 11.72 | 12.85 |
|                 | 8H   | 14.39            | 14.76 | 15.32 | 15.69 | 16.84 | 10.56          | 10.93 | 11.49 | 11.86 | 13.01 |
|                 | 12H  | 14.54            | 14.86 | 15.47 | 15.79 | 16.98 | 10.69          | 11.01 | 11.62 | 11.94 | 13.13 |
| 12H             | 4H   | 13.56            | 14.01 | 14.47 | 14.93 | 16.06 | 9.86           | 10.31 | 10.77 | 11.23 | 12.36 |
|                 | 6H   | 14.15            | 14.52 | 15.08 | 15.45 | 16.60 | 10.42          | 10.79 | 11.35 | 11.72 | 12.86 |
|                 | 8H   | 14.38            | 14.70 | 15.31 | 15.63 | 16.82 | 10.64          | 10.96 | 11.57 | 11.88 | 13.08 |

END OF REPORT