

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: P925499

Luminaire Tested: DFN2DIP-SQ3F0-050D100US950-RLLONL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P925499  
REPORT IS A COMBINATION OF REPORTS P901492 AND P898289  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-SQ3F0-050D100US950-RLLONL  
Description: 3 foot, Square Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Open No Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

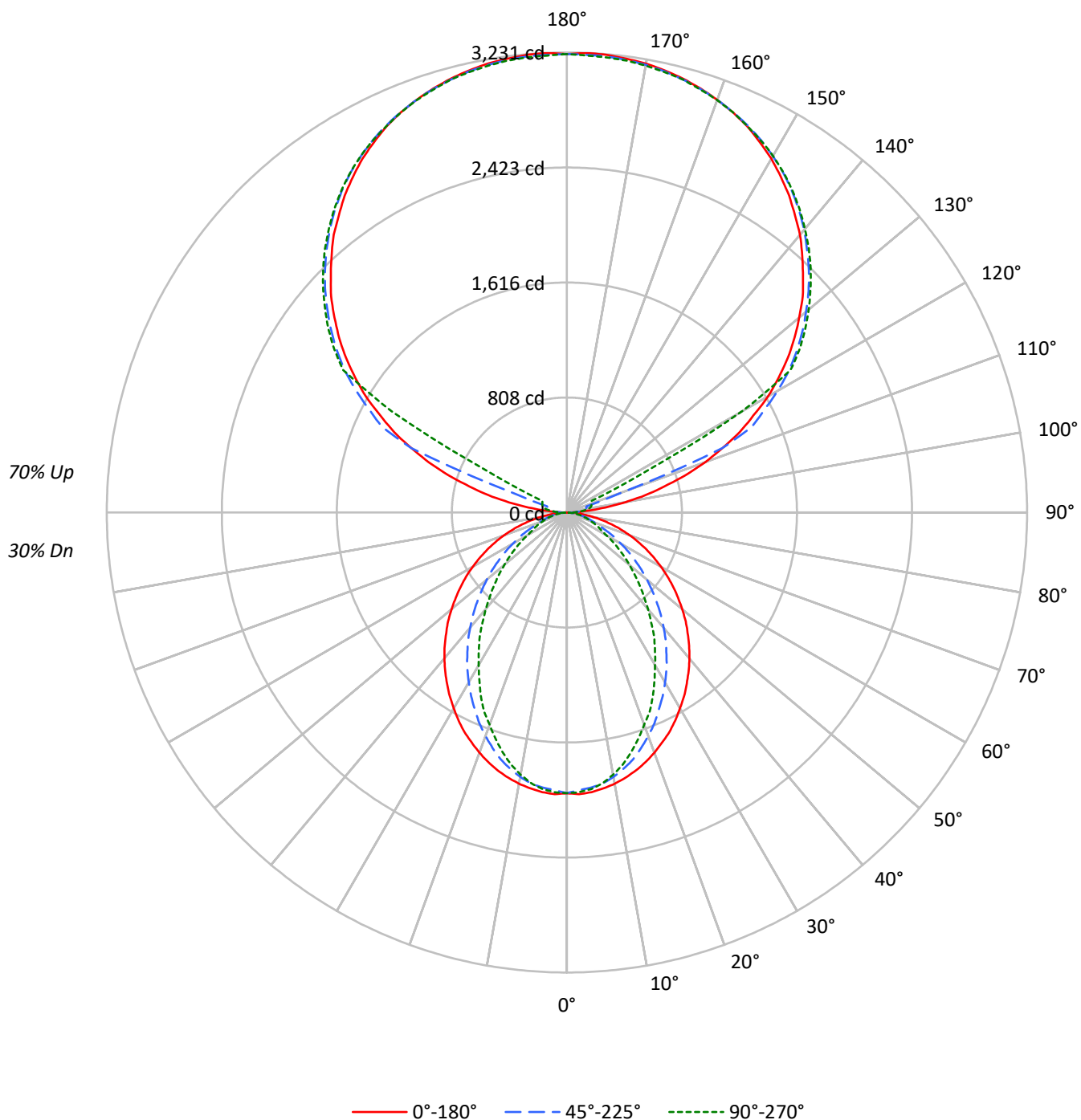
Lumens per Lamp: N/A  
Luminaire Lumens: 13499.2 lumens  
Efficiency: N/A  
Efficacy: 112.8 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16  
Luminous Opening: Rectangular w/ Sides (W: 3.06' x L: 3.06' x H: 0.1')  
CIE Type: Semi-Indirect

Input Watts (W): 119.7  
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 |    |    |    | 0  |
| RW  | 70  | 50  | 30  | 10  | 70 | 50 | 30 | 10 | 50 | 30 | 10 | 50 | 30 | 10 | 50 | 30 | 10 |
| RCR |     |     |     |     |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 0   | 102 | 102 | 102 | 102 | 92 | 92 | 92 | 92 | 72 | 72 | 72 | 54 | 54 | 54 | 38 | 38 | 38 |
| 1   | 94  | 90  | 86  | 83  | 84 | 81 | 77 | 75 | 64 | 62 | 60 | 48 | 47 | 46 | 34 | 33 | 32 |
| 2   | 85  | 78  | 73  | 68  | 76 | 71 | 66 | 62 | 56 | 53 | 50 | 43 | 40 | 39 | 30 | 29 | 28 |
| 3   | 78  | 69  | 62  | 57  | 70 | 62 | 57 | 52 | 50 | 46 | 42 | 38 | 35 | 33 | 27 | 25 | 24 |
| 4   | 71  | 61  | 54  | 48  | 64 | 55 | 49 | 44 | 44 | 40 | 36 | 34 | 31 | 28 | 24 | 22 | 21 |
| 5   | 66  | 55  | 47  | 41  | 59 | 49 | 43 | 38 | 40 | 35 | 31 | 30 | 27 | 25 | 22 | 20 | 18 |
| 6   | 60  | 49  | 41  | 36  | 54 | 44 | 38 | 33 | 36 | 31 | 27 | 28 | 24 | 22 | 20 | 18 | 16 |
| 7   | 56  | 44  | 37  | 31  | 50 | 40 | 34 | 29 | 32 | 28 | 24 | 25 | 22 | 19 | 18 | 16 | 15 |
| 8   | 52  | 40  | 33  | 28  | 46 | 36 | 30 | 25 | 29 | 25 | 21 | 23 | 20 | 17 | 17 | 15 | 13 |
| 9   | 48  | 37  | 29  | 25  | 43 | 33 | 27 | 23 | 27 | 22 | 19 | 21 | 18 | 15 | 16 | 13 | 12 |
| 10  | 45  | 33  | 27  | 22  | 40 | 30 | 24 | 20 | 25 | 20 | 17 | 20 | 16 | 14 | 14 | 12 | 11 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 2259 | 2259 | 2259 |
| 5°  | 2261 | 2222 | 2237 |
| 10° | 2237 | 2176 | 2163 |
| 15° | 2205 | 2103 | 2050 |
| 20° | 2163 | 2003 | 1911 |
| 25° | 2120 | 1890 | 1777 |
| 30° | 2062 | 1775 | 1608 |
| 35° | 2006 | 1651 | 1459 |
| 40° | 1948 | 1523 | 1288 |
| 45° | 1881 | 1382 | 1134 |
| 50° | 1812 | 1239 | 983  |
| 55° | 1740 | 1086 | 838  |
| 60° | 1656 | 927  | 689  |
| 65° | 1560 | 766  | 619  |
| 70° | 1443 | 615  | 559  |
| 75° | 1296 | 539  | 507  |
| 80° | 1082 | 448  | 437  |
| 85° | 734  | 292  | 325  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 90°

Vertical Angle: 90°

Luminance: 2205 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 184.8   | 1.4       |
| 10°-20°   | 507.2   | 3.8       |
| 20°-30°   | 712.1   | 5.3       |
| 30°-40°   | 776.3   | 5.8       |
| 40°-50°   | 713.5   | 5.3       |
| 50°-60°   | 560.3   | 4.2       |
| 60°-70°   | 364.7   | 2.7       |
| 70°-80°   | 187.7   | 1.4       |
| 80°-90°   | 53.6    | 0.4       |
| 90°-100°  | 106.2   | 0.8       |
| 100°-110° | 395.8   | 2.9       |
| 110°-120° | 1049.6  | 7.8       |
| 120°-130° | 1740.9  | 12.9      |
| 130°-140° | 1849.2  | 13.7      |
| 140°-150° | 1718.7  | 12.7      |
| 150°-160° | 1381.8  | 10.2      |
| 160°-170° | 890.4   | 6.6       |
| 170°-180° | 306.5   | 2.3       |
| 0°-30°    | 1404.1  | 10.4      |
| 0°-40°    | 2180.4  | 16.2      |
| 0°-60°    | 3454.1  | 25.6      |
| 0°-90°    | 4060.2  | 30.1      |
| 90°-120°  | 1551.6  | 11.5      |
| 90°-150°  | 6860.4  | 50.8      |
| 90°-180°  | 9439.0  | 69.9      |
| 0°-180°   | 13499.2 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 1971 | 1971  | 1971 | 1971  | 1971 |      |
| 5°   | 1971 | 1963  | 1939 | 1955  | 1950 | 187  |
| 15°  | 1875 | 1855  | 1795 | 1761  | 1743 | 528  |
| 25°  | 1702 | 1645  | 1527 | 1454  | 1427 | 783  |
| 35°  | 1467 | 1376  | 1219 | 1106  | 1067 | 918  |
| 45°  | 1199 | 1079  | 892  | 765   | 722  | 926  |
| 55°  | 912  | 772   | 580  | 473   | 439  | 815  |
| 65°  | 616  | 471   | 310  | 250   | 244  | 610  |
| 75°  | 328  | 203   | 143  | 130   | 128  | 347  |
| 85°  | 77   | 39    | 34   | 34    | 34   | 88   |
| 90°  | 2    | 28    | 46   | 58    | 63   | 13   |
| 95°  | 151  | 74    | 91   | 103   | 100  | 179  |
| 105° | 708  | 778   | 142  | 168   | 177  | 757  |
| 115° | 1340 | 1379  | 1438 | 359   | 191  | 1319 |
| 125° | 1894 | 1924  | 1969 | 1985  | 1992 | 1689 |
| 135° | 2344 | 2381  | 2402 | 2425  | 2421 | 1810 |
| 145° | 2719 | 2716  | 2756 | 2772  | 2761 | 1700 |
| 155° | 2994 | 2973  | 3001 | 3015  | 2996 | 1380 |
| 165° | 3154 | 3140  | 3147 | 3164  | 3147 | 891  |
| 175° | 3226 | 3210  | 3215 | 3231  | 3208 | 307  |
| 180° | 3220 | 3220  | 3220 | 3220  | 3220 |      |

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**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 1971.4 | 1971.4 | 1971.4 | 1971.4 | 1971.4 |
| 2.5°   | 1980.3 | 1971.4 | 1951.8 | 1969.7 | 1966.1 |
| 5°     | 1971.4 | 1962.6 | 1939.3 | 1955.3 | 1950.1 |
| 7.5°   | 1955.3 | 1944.7 | 1919.7 | 1926.8 | 1917.8 |
| 10°    | 1933.9 | 1921.5 | 1885.9 | 1880.4 | 1869.7 |
| 12.5°  | 1907.2 | 1891.2 | 1842.9 | 1832.3 | 1812.6 |
| 15°    | 1875.1 | 1855.4 | 1794.9 | 1761.0 | 1743.1 |
| 17.5°  | 1837.6 | 1809.1 | 1734.1 | 1694.9 | 1666.3 |
| 20°    | 1794.9 | 1759.1 | 1669.9 | 1625.4 | 1586.0 |
| 22.5°  | 1748.5 | 1707.4 | 1603.9 | 1543.3 | 1516.6 |
| 25°    | 1702.0 | 1644.9 | 1527.2 | 1454.1 | 1427.2 |
| 27.5°  | 1646.8 | 1586.0 | 1455.8 | 1371.9 | 1330.9 |
| 30°    | 1587.9 | 1520.0 | 1377.3 | 1286.4 | 1238.1 |
| 32.5°  | 1530.8 | 1448.6 | 1302.5 | 1195.4 | 1150.7 |
| 35°    | 1466.6 | 1375.6 | 1218.6 | 1106.2 | 1066.9 |
| 37.5°  | 1404.1 | 1305.9 | 1140.1 | 1016.9 | 972.4  |
| 40°    | 1338.1 | 1231.1 | 1057.9 | 931.3  | 884.9  |
| 42.5°  | 1270.3 | 1156.2 | 975.9  | 843.8  | 799.4  |
| 45°    | 1199.0 | 1079.4 | 892.1  | 765.3  | 722.5  |
| 47.5°  | 1131.2 | 1004.6 | 811.9  | 685.1  | 645.9  |
| 50°    | 1056.3 | 929.6  | 733.3  | 610.1  | 572.8  |
| 52.5°  | 983.0  | 849.2  | 658.4  | 540.6  | 506.8  |
| 55°    | 911.6  | 772.5  | 579.7  | 472.8  | 438.9  |
| 57.5°  | 838.6  | 695.8  | 510.3  | 410.4  | 381.8  |
| 60°    | 763.6  | 620.9  | 437.0  | 346.2  | 317.6  |
| 62.5°  | 690.5  | 547.8  | 374.6  | 289.1  | 274.8  |
| 65°    | 615.5  | 471.0  | 310.4  | 249.9  | 244.4  |
| 67.5°  | 544.2  | 399.6  | 249.9  | 219.4  | 214.1  |
| 70°    | 469.3  | 330.1  | 206.9  | 189.1  | 181.9  |
| 72.5°  | 397.9  | 265.8  | 173.1  | 158.8  | 155.2  |
| 75°    | 328.3  | 203.3  | 142.7  | 130.2  | 128.5  |
| 77.5°  | 258.7  | 144.4  | 112.5  | 105.2  | 101.6  |
| 80°    | 194.4  | 103.5  | 85.6   | 78.5   | 78.5   |
| 82.5°  | 135.6  | 69.6   | 58.9   | 55.2   | 55.2   |
| 85°    | 76.7   | 39.2   | 33.9   | 33.9   | 33.9   |
| 87.5°  | 28.6   | 14.2   | 14.2   | 12.5   | 12.5   |
| 90°    | 2.2    | 28.0   | 46.5   | 58.4   | 62.8   |
| 92.5°  | 58.4   | 48.9   | 55.9   | 60.6   | 62.8   |
| 95°    | 151.3  | 74.4   | 90.7   | 102.7  | 100.2  |
| 97.5°  | 272.5  | 81.6   | 118.7  | 125.8  | 128.1  |
| 100°   | 412.5  | 93.2   | 132.8  | 151.3  | 156.1  |
| 102.5° | 566.0  | 561.6  | 137.5  | 162.9  | 170.1  |
| 105°   | 708.2  | 778.2  | 142.2  | 167.6  | 177.1  |
| 107.5° | 873.7  | 931.8  | 146.9  | 172.4  | 181.7  |
| 110°   | 1032.1 | 1080.9 | 407.7  | 174.9  | 183.9  |

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**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 1181.2 | 1223.0 | 1183.5 | 179.3  | 186.5  |
| 115°   | 1339.5 | 1379.1 | 1437.5 | 358.8  | 191.2  |
| 117.5° | 1477.0 | 1523.5 | 1563.3 | 1230.0 | 619.7  |
| 120°   | 1630.9 | 1665.7 | 1707.8 | 1735.7 | 1421.2 |
| 122.5° | 1761.2 | 1798.5 | 1845.2 | 1859.1 | 1861.5 |
| 125°   | 1894.0 | 1924.4 | 1968.7 | 1985.0 | 1991.9 |
| 127.5° | 2015.1 | 2047.8 | 2082.9 | 2106.1 | 2108.3 |
| 130°   | 2129.3 | 2166.7 | 2192.2 | 2217.9 | 2215.7 |
| 132.5° | 2245.8 | 2276.2 | 2301.7 | 2322.7 | 2320.5 |
| 135°   | 2343.8 | 2381.1 | 2401.9 | 2425.4 | 2420.7 |
| 137.5° | 2446.2 | 2474.1 | 2497.6 | 2520.8 | 2513.9 |
| 140°   | 2546.2 | 2565.1 | 2590.5 | 2611.6 | 2599.9 |
| 142.5° | 2630.4 | 2646.7 | 2676.8 | 2695.3 | 2683.8 |
| 145°   | 2718.9 | 2716.4 | 2756.0 | 2772.3 | 2760.7 |
| 147.5° | 2795.5 | 2788.6 | 2828.1 | 2839.8 | 2830.7 |
| 150°   | 2870.2 | 2853.9 | 2891.3 | 2905.1 | 2893.5 |
| 152.5° | 2933.0 | 2914.5 | 2949.4 | 2963.4 | 2947.1 |
| 155°   | 2993.7 | 2972.9 | 3000.8 | 3014.6 | 2996.1 |
| 157.5° | 3042.6 | 3024.1 | 3045.1 | 3061.4 | 3042.6 |
| 160°   | 3084.7 | 3070.5 | 3084.7 | 3098.5 | 3082.2 |
| 162.5° | 3121.7 | 3107.8 | 3119.5 | 3135.8 | 3114.8 |
| 165°   | 3154.3 | 3140.5 | 3147.4 | 3163.8 | 3147.4 |
| 167.5° | 3180.1 | 3165.9 | 3173.2 | 3189.5 | 3168.4 |
| 170°   | 3201.1 | 3187.0 | 3191.7 | 3208.0 | 3187.0 |
| 172.5° | 3214.9 | 3201.1 | 3205.8 | 3222.1 | 3201.1 |
| 175°   | 3226.5 | 3210.2 | 3214.9 | 3231.3 | 3208.0 |
| 177.5° | 3231.3 | 3214.9 | 3217.5 | 3233.8 | 3212.7 |
| 180°   | 3219.7 | 3219.7 | 3219.7 | 3219.7 | 3219.7 |

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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 | 7.72             | 8.41  | 8.84  | 9.52  | 11.05 | 3.68           | 4.37 | 4.80 | 5.48 | 7.01  |
|                 | 3H   | 9.39             | 10.00 | 10.51 | 11.12 | 12.67 | 4.86           | 5.47 | 5.98 | 6.59 | 8.14  |
|                 | 4H   | 9.98             | 10.57 | 11.12 | 11.69 | 13.24 | 5.29           | 5.88 | 6.43 | 7.00 | 8.55  |
|                 | 6H   | 10.39            | 10.93 | 11.54 | 12.05 | 13.62 | 5.60           | 6.14 | 6.74 | 7.26 | 8.82  |
|                 | 8H   | 10.52            | 11.03 | 11.66 | 12.16 | 13.72 | 5.69           | 6.20 | 6.83 | 7.33 | 8.89  |
|                 | 12H  | 10.57            | 11.06 | 11.72 | 12.18 | 13.76 | 5.72           | 6.21 | 6.87 | 7.33 | 8.92  |
| 4H              | 2H   | 7.72             | 8.31  | 8.86  | 9.42  | 10.98 | 4.26           | 4.84 | 5.40 | 5.96 | 7.51  |
|                 | 3H   | 9.53             | 10.02 | 10.68 | 11.16 | 12.73 | 5.59           | 6.08 | 6.74 | 7.22 | 8.78  |
|                 | 4H   | 10.22            | 10.66 | 11.37 | 11.80 | 13.38 | 6.13           | 6.57 | 7.28 | 7.71 | 9.29  |
|                 | 6H   | 10.72            | 11.10 | 11.87 | 12.26 | 13.83 | 6.53           | 6.91 | 7.69 | 8.07 | 9.64  |
|                 | 8H   | 10.89            | 11.25 | 12.04 | 12.39 | 13.98 | 6.65           | 7.01 | 7.81 | 8.16 | 9.75  |
|                 | 12H  | 10.97            | 11.30 | 12.15 | 12.46 | 14.05 | 6.71           | 7.03 | 7.88 | 8.19 | 9.79  |
| 8H              | 4H   | 10.17            | 10.53 | 11.33 | 11.68 | 13.27 | 6.39           | 6.75 | 7.55 | 7.90 | 9.49  |
|                 | 6H   | 10.73            | 11.02 | 11.90 | 12.21 | 13.80 | 6.90           | 7.19 | 8.07 | 8.38 | 9.97  |
|                 | 8H   | 10.94            | 11.20 | 12.12 | 12.36 | 13.97 | 7.08           | 7.34 | 8.26 | 8.51 | 10.12 |
|                 | 12H  | 11.07            | 11.29 | 12.25 | 12.46 | 14.10 | 7.19           | 7.42 | 8.37 | 8.58 | 10.22 |
| 12H             | 4H   | 10.12            | 10.44 | 11.29 | 11.60 | 13.20 | 6.39           | 6.71 | 7.56 | 7.87 | 9.47  |
|                 | 6H   | 10.70            | 10.96 | 11.88 | 12.13 | 13.74 | 6.94           | 7.20 | 8.12 | 8.37 | 9.98  |
|                 | 8H   | 10.91            | 11.14 | 12.10 | 12.30 | 13.95 | 7.14           | 7.37 | 8.33 | 8.53 | 10.18 |

END OF REPORT