

LM-79-08 Approved Method: Electrical and Photometric Measurements of Solid-State  
Lighting Products

Test Report Prepared for

Cooper Lighting Solutions

(formerly Eaton)

Brand: FAIL-SAFE

Report Number: P#

Luminaire Tested: **FLDSQ4C40D010 FEU4C409030 F4LC-DFSSQ-MW**

Issue Date: 12/13/2022

Tested By:

Approved By:



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**Test Information**

Test Method: LM-79-08  
 Report Number: P#  
 Test Lab: INNOVATION CENTER  
 Issue Date: 12/13/2022  
 Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
 Product Line: FAIL-SAFE  
 Catalog Number: FLDSQ4C40D010 FEU4C409030 F4LC-DFSSQ-MW  
 Description: 4 INCH 4000 LUMEN FAIL-SAFE LED DOWNLIGHT WITH, 3000K, 90CRI LEDS AND F4LC-DFSSQ TRIM WITH MW FINISH  
 Light Source: -  
 Ballast/Driver: -

**Summary**

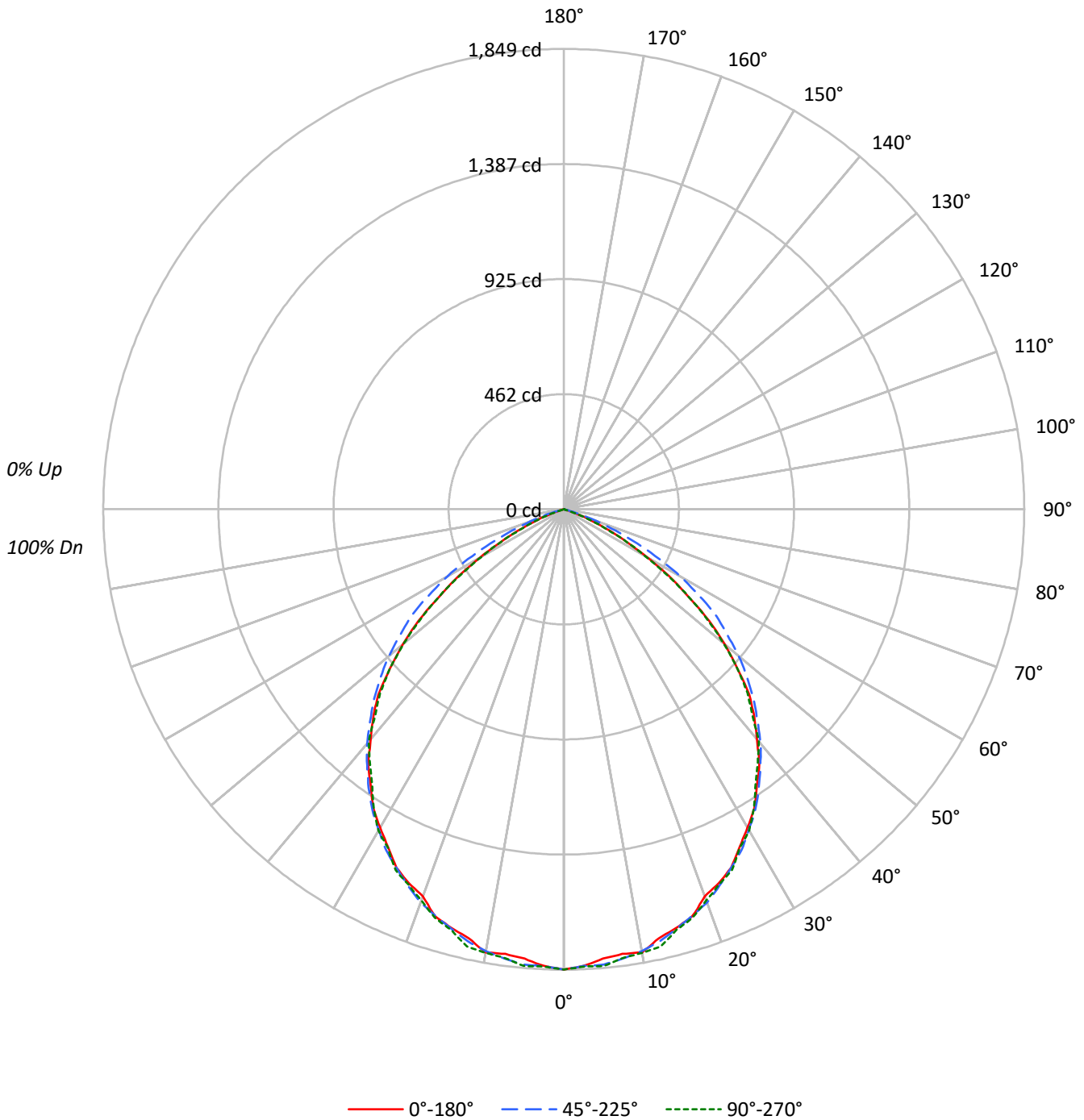
Lumens per Lamp: N/A  
 Luminaire Lumens: 3949.0 lumens  
 Efficiency: N/A  
 Efficacy: 84.0 lumens/watt  
 Spacing Criteria (0/90/45): 1.19 / 1.2 / 1.29  
 Luminous Opening: Rectangular (W 0.33' x L: 0.33' x H: 0')  
 CIE Type: Direct

Input Watts (W): 47  
 Input Voltage (V):  
 Input Current (Ain): NR  
 Voltage Rise (V): NR  
 Power Factor: NR  
 Total Harmonic Distortion (THDi): NR  
 Frequency (hertz): 60  
 Stabilization Time: NR  
 Operation Time: NR  
 Ambient Temperature (°C): NR  
 Test Distance: 25 FT

| Measurement and Test Equipment |                       |                  |                      |
|--------------------------------|-----------------------|------------------|----------------------|
| Instrument                     | Identification Number | Calibration Date | Calibration Due Date |
| Photometer                     | GONIO 1 IN0055        | 4/22/2021        | 10/22/2021           |
| Power Meter                    | XITRON 2801 IN0197    | 12/1/2020        | 12/1/2021            |
| AC Power Source                | CHROMA 61505 IN0196   | 12/1/2020        | 12/1/2021            |
| DC Power Supply                | AGILENT E3634A IN0198 | 11/30/2020       | 11/30/2021           |
| Room Thermometer               | ONSET IN0143          | 12/1/2020        | 12/1/2021            |

TEST NUMBER: P#  
CATALOG NUMBER: FLDSQ4C40D010 FEU4C409030 F4LC-DFSSQ-MW

### Luminous Intensity Polar Plot



TEST NUMBER: P#  
 CATALOG NUMBER: FLDSQ4C40D010 FEU4C409030 F4LC-DFSSQ-MW

**COEFFICIENT OF UTILIZATION - ZONAL CAVITY METHOD:**

|     |     |     |     |     |     |     |     |     |     |     |     |  |     |     |     |  |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--|-----|-----|-----|--|-----|-----|-----|-----|
| RF  | 20  |     |     |     | 20  |     |     |     | 20  |     |     |  | 20  |     |     |  | 20  |     |     |     |
| RC  | 80  |     |     |     | 70  |     |     |     | 50  |     |     |  | 30  |     |     |  | 10  | 0   |     |     |
| RW  | 70  | 50  | 30  | 10  | 70  | 50  | 30  | 10  | 50  | 30  | 10  |  | 50  | 30  | 10  |  | 50  | 30  | 10  | 0   |
| RCR |     |     |     |     |     |     |     |     |     |     |     |  |     |     |     |  |     |     |     |     |
| 0   | 119 | 119 | 119 | 119 | 116 | 116 | 116 | 116 | 111 | 111 | 111 |  | 106 | 106 | 106 |  | 102 | 102 | 102 | 100 |
| 1   | 111 | 108 | 104 | 101 | 109 | 105 | 102 | 100 | 101 | 99  | 96  |  | 97  | 95  | 94  |  | 94  | 92  | 91  | 89  |
| 2   | 103 | 96  | 91  | 86  | 100 | 94  | 89  | 85  | 91  | 87  | 83  |  | 88  | 84  | 81  |  | 85  | 82  | 79  | 77  |
| 3   | 95  | 86  | 79  | 74  | 93  | 85  | 78  | 73  | 82  | 76  | 72  |  | 79  | 74  | 71  |  | 77  | 73  | 69  | 67  |
| 4   | 88  | 77  | 70  | 64  | 86  | 76  | 69  | 63  | 74  | 67  | 63  |  | 71  | 66  | 62  |  | 69  | 65  | 61  | 59  |
| 5   | 81  | 70  | 62  | 56  | 79  | 69  | 61  | 56  | 67  | 60  | 55  |  | 65  | 59  | 54  |  | 63  | 58  | 54  | 52  |
| 6   | 75  | 63  | 55  | 49  | 73  | 62  | 55  | 49  | 61  | 54  | 49  |  | 59  | 53  | 48  |  | 57  | 52  | 48  | 46  |
| 7   | 70  | 58  | 50  | 44  | 68  | 57  | 49  | 44  | 55  | 49  | 44  |  | 54  | 48  | 43  |  | 53  | 47  | 43  | 41  |
| 8   | 65  | 53  | 45  | 40  | 64  | 52  | 45  | 39  | 51  | 44  | 39  |  | 50  | 44  | 39  |  | 49  | 43  | 39  | 37  |
| 9   | 61  | 49  | 41  | 36  | 60  | 48  | 41  | 36  | 47  | 40  | 36  |  | 46  | 40  | 35  |  | 45  | 39  | 35  | 33  |
| 10  | 57  | 45  | 38  | 33  | 56  | 44  | 37  | 33  | 44  | 37  | 32  |  | 43  | 37  | 32  |  | 42  | 36  | 32  | 31  |

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

|     | 0°     | 45°    | 90°    |
|-----|--------|--------|--------|
| 0°  | 178369 | 178369 | 178369 |
| 5°  | 175496 | 177782 | 178286 |
| 10° | 177016 | 176496 | 177261 |
| 15° | 173913 | 174173 | 174692 |
| 20° | 169866 | 172566 | 171755 |
| 25° | 169128 | 169128 | 170246 |
| 30° | 164416 | 165586 | 165887 |
| 35° | 159289 | 160844 | 158052 |
| 40° | 151816 | 154789 | 153466 |
| 45° | 143674 | 146908 | 142242 |
| 50° | 126543 | 137561 | 125747 |
| 55° | 102482 | 125898 | 102936 |
| 60° | 74991  | 104382 | 73486  |
| 65° | 45571  | 74338  | 44361  |
| 70° | 17773  | 40004  | 17040  |
| 75° | 1939   | 10774  | 1939   |
| 80° | 1500   | 1500   | 1500   |
| 85° | 0      | 0      | 0      |

TEST NUMBER: P#  
 CATALOG NUMBER: FLDSQ4C40D010 FEU4C409030 F4LC-DFSSQ-MW

**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 174.5  | 4.4       |
| 10°-20°   | 493.8  | 12.5      |
| 20°-30°   | 732.7  | 18.6      |
| 30°-40°   | 848.9  | 21.5      |
| 40°-50°   | 813.9  | 20.6      |
| 50°-60°   | 598.5  | 15.2      |
| 60°-70°   | 258.5  | 6.5       |
| 70°-80°   | 27.9   | 0.7       |
| 80°-90°   | 0.4    | 0.0       |
| 90°-100°  | 0.0    | 0.0       |
| 100°-110° | 0.0    | 0.0       |
| 110°-120° | 0.0    | 0.0       |
| 120°-130° | 0.0    | 0.0       |
| 130°-140° | 0.0    | 0.0       |
| 140°-150° | 0.0    | 0.0       |
| 150°-160° | 0.0    | 0.0       |
| 160°-170° | 0.0    | 0.0       |
| 170°-180° | 0.0    | 0.0       |
| 0°-30°    | 1400.9 | 35.5      |
| 0°-40°    | 2249.9 | 57.0      |
| 0°-60°    | 3662.3 | 92.7      |
| 0°-90°    | 3949.0 | 100.0     |
| 90°-120°  | 0.0    | 0.0       |
| 90°-150°  | 0.0    | 0.0       |
| 90°-180°  | 0.0    | 0.0       |
| 0°-180°   | 3949.0 | 100.0     |

**CANDELA DISTRIBUTION:**

|     | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|-----|------|-------|------|-------|------|------|
| 0°  | 1849 | 1849  | 1849 | 1849  | 1849 |      |
| 5°  | 1812 | 1830  | 1836 | 1838  | 1841 | 173  |
| 15° | 1741 | 1752  | 1744 | 1746  | 1749 | 491  |
| 25° | 1589 | 1586  | 1589 | 1591  | 1599 | 727  |
| 35° | 1352 | 1360  | 1366 | 1363  | 1342 | 846  |
| 45° | 1053 | 1056  | 1077 | 1061  | 1042 | 800  |
| 55° | 609  | 672   | 748  | 670   | 612  | 548  |
| 65° | 200  | 249   | 326  | 247   | 194  | 205  |
| 75° | 5    | 8     | 29   | 5     | 5    | 16   |
| 85° | 0    | 0     | 0    | 0     | 0    | 0    |
| 90° | 0    | 0     | 0    | 0     | 0    |      |

TEST NUMBER: P#  
 CATALOG NUMBER: FLDSQ4C40D010 FEU4C409030 F4LC-DFSSQ-MW

**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 5°     | 10°    | 15°    | 20°    | 22.5°  | 25°    | 30°    | 35°    | 40°    | 45°    |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 1848.6 | 1848.6 | 1848.6 | 1848.6 | 1848.6 | 1848.6 | 1848.6 | 1848.6 | 1848.6 | 1848.6 | 1848.6 |
| 2.5°  | 1835.5 | 1856.5 | 1859.1 | 1846.0 | 1840.7 | 1832.9 | 1851.2 | 1838.1 | 1843.4 | 1838.1 | 1835.5 |
| 5°    | 1811.9 | 1835.5 | 1838.1 | 1838.1 | 1832.9 | 1830.2 | 1838.1 | 1835.5 | 1832.9 | 1827.6 | 1835.5 |
| 7.5°  | 1801.4 | 1814.5 | 1827.6 | 1811.9 | 1819.7 | 1817.2 | 1835.5 | 1827.6 | 1825.0 | 1825.0 | 1819.7 |
| 10°   | 1806.7 | 1804.0 | 1814.5 | 1798.7 | 1804.0 | 1798.7 | 1814.5 | 1814.5 | 1809.2 | 1804.0 | 1801.4 |
| 12.5° | 1764.5 | 1785.5 | 1785.5 | 1783.0 | 1777.7 | 1769.8 | 1785.5 | 1796.2 | 1780.3 | 1780.3 | 1777.7 |
| 15°   | 1741.0 | 1746.2 | 1748.8 | 1748.8 | 1746.2 | 1751.5 | 1759.3 | 1748.8 | 1751.5 | 1738.3 | 1743.6 |
| 17.5° | 1714.7 | 1704.2 | 1712.1 | 1706.8 | 1709.5 | 1714.7 | 1725.2 | 1725.2 | 1709.5 | 1706.8 | 1712.1 |
| 20°   | 1654.3 | 1685.8 | 1688.5 | 1672.7 | 1675.3 | 1675.3 | 1693.7 | 1678.0 | 1688.5 | 1675.3 | 1680.6 |
| 22.5° | 1625.4 | 1646.4 | 1649.1 | 1628.1 | 1641.1 | 1625.4 | 1643.8 | 1620.1 | 1646.4 | 1628.1 | 1635.9 |
| 25°   | 1588.6 | 1586.1 | 1593.9 | 1583.4 | 1586.1 | 1586.1 | 1599.1 | 1588.6 | 1596.6 | 1586.1 | 1588.6 |
| 27.5° | 1528.3 | 1549.3 | 1546.6 | 1536.1 | 1541.4 | 1538.8 | 1565.1 | 1536.1 | 1551.9 | 1538.8 | 1544.1 |
| 30°   | 1475.7 | 1494.1 | 1488.9 | 1478.4 | 1478.4 | 1470.5 | 1499.4 | 1491.5 | 1488.9 | 1488.9 | 1486.2 |
| 32.5° | 1423.2 | 1425.9 | 1420.6 | 1423.2 | 1425.9 | 1415.4 | 1439.0 | 1428.5 | 1425.9 | 1428.5 | 1431.1 |
| 35°   | 1352.3 | 1352.3 | 1357.5 | 1349.7 | 1360.2 | 1360.2 | 1381.2 | 1368.0 | 1365.5 | 1357.5 | 1365.5 |
| 37.5° | 1289.3 | 1281.5 | 1284.0 | 1284.0 | 1289.3 | 1294.5 | 1305.0 | 1299.8 | 1299.8 | 1292.0 | 1297.2 |
| 40°   | 1205.3 | 1200.0 | 1207.9 | 1207.9 | 1215.8 | 1215.8 | 1226.3 | 1221.0 | 1228.9 | 1228.9 | 1228.9 |
| 42.5° | 1131.8 | 1131.8 | 1126.5 | 1134.4 | 1137.0 | 1134.4 | 1152.8 | 1150.1 | 1152.8 | 1147.5 | 1150.1 |
| 45°   | 1052.9 | 1052.9 | 1047.7 | 1045.1 | 1058.2 | 1055.6 | 1076.6 | 1068.7 | 1079.2 | 1073.9 | 1076.6 |
| 47.5° | 945.3  | 958.4  | 950.5  | 958.4  | 974.2  | 976.9  | 989.9  | 984.7  | 995.2  | 987.4  | 997.9  |
| 50°   | 843.0  | 843.0  | 850.8  | 861.3  | 877.0  | 879.7  | 895.5  | 906.0  | 911.2  | 913.8  | 916.4  |
| 52.5° | 735.3  | 732.6  | 740.5  | 753.6  | 766.8  | 777.3  | 793.0  | 808.8  | 819.3  | 835.0  | 827.1  |
| 55°   | 609.2  | 614.4  | 622.4  | 638.1  | 659.1  | 672.2  | 685.4  | 706.4  | 724.8  | 732.6  | 748.4  |
| 57.5° | 501.5  | 496.3  | 501.5  | 522.5  | 546.2  | 556.7  | 575.1  | 596.1  | 622.4  | 638.1  | 643.4  |
| 60°   | 388.6  | 391.3  | 396.5  | 414.9  | 433.3  | 449.0  | 456.9  | 491.0  | 514.7  | 530.4  | 540.9  |
| 62.5° | 286.3  | 291.5  | 296.8  | 312.5  | 330.8  | 344.0  | 357.1  | 386.0  | 407.0  | 422.8  | 433.3  |
| 65°   | 199.6  | 202.2  | 210.1  | 217.9  | 236.3  | 249.4  | 259.9  | 283.6  | 304.6  | 317.8  | 325.6  |
| 67.5° | 123.4  | 126.0  | 131.2  | 141.8  | 154.9  | 165.4  | 175.9  | 191.7  | 210.1  | 223.2  | 225.8  |
| 70°   | 63.0   | 65.7   | 68.2   | 76.2   | 86.7   | 91.9   | 99.7   | 112.9  | 126.0  | 136.5  | 141.8  |
| 72.5° | 21.0   | 21.0   | 23.7   | 28.9   | 34.2   | 39.4   | 42.0   | 55.2   | 65.7   | 70.9   | 73.5   |
| 75°   | 5.2    | 5.2    | 5.2    | 5.2    | 5.2    | 7.9    | 7.9    | 15.7   | 21.0   | 26.2   | 28.9   |
| 77.5° | 2.7    | 2.7    | 2.7    | 2.7    | 2.7    | 2.7    | 2.7    | 2.7    | 2.7    | 5.2    | 5.2    |
| 80°   | 2.7    | 2.7    | 2.7    | 2.7    | 2.7    | 2.7    | 2.7    | 2.7    | 2.7    | 2.7    | 2.7    |
| 82.5° | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |
| 85°   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |
| 87.5° | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |
| 90°   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |



TEST NUMBER: P#  
 CATALOG NUMBER: FLDSQ4C40D010 FEU4C409030 F4LC-DFSSQ-MW

**CANDELA DISTRIBUTION (continued):**

|       | 50°    | 55°    | 60°    | 65°    | 67.5°  | 70°    | 75°    | 80°    | 85°    | 90°    |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 1848.6 | 1848.6 | 1848.6 | 1848.6 | 1848.6 | 1848.6 | 1848.6 | 1848.6 | 1848.6 | 1848.6 |
| 2.5°  | 1848.6 | 1843.4 | 1840.7 | 1843.4 | 1843.4 | 1840.7 | 1848.6 | 1859.1 | 1872.2 | 1838.1 |
| 5°    | 1846.0 | 1840.7 | 1846.0 | 1830.2 | 1838.1 | 1832.9 | 1843.4 | 1840.7 | 1851.2 | 1840.7 |
| 7.5°  | 1838.1 | 1827.6 | 1830.2 | 1822.4 | 1832.9 | 1819.7 | 1827.6 | 1843.4 | 1832.9 | 1817.2 |
| 10°   | 1811.9 | 1806.7 | 1825.0 | 1798.7 | 1793.5 | 1804.0 | 1825.0 | 1809.2 | 1804.0 | 1809.2 |
| 12.5° | 1785.5 | 1785.5 | 1793.5 | 1772.5 | 1775.0 | 1780.3 | 1790.8 | 1780.3 | 1785.5 | 1798.7 |
| 15°   | 1756.7 | 1751.5 | 1764.5 | 1748.8 | 1746.2 | 1741.0 | 1751.5 | 1751.5 | 1756.7 | 1748.8 |
| 17.5° | 1722.6 | 1714.7 | 1714.7 | 1709.5 | 1706.8 | 1720.0 | 1725.2 | 1727.8 | 1730.5 | 1720.0 |
| 20°   | 1680.6 | 1678.0 | 1685.8 | 1678.0 | 1680.6 | 1683.2 | 1683.2 | 1678.0 | 1701.6 | 1672.7 |
| 22.5° | 1635.9 | 1643.8 | 1633.3 | 1628.1 | 1633.3 | 1638.6 | 1638.6 | 1641.1 | 1635.9 | 1630.6 |
| 25°   | 1591.3 | 1596.6 | 1599.1 | 1583.4 | 1591.3 | 1583.4 | 1601.8 | 1604.4 | 1593.9 | 1599.1 |
| 27.5° | 1551.9 | 1544.1 | 1541.4 | 1530.9 | 1536.1 | 1533.6 | 1536.1 | 1536.1 | 1551.9 | 1530.9 |
| 30°   | 1491.5 | 1483.6 | 1486.2 | 1478.4 | 1481.0 | 1478.4 | 1481.0 | 1481.0 | 1491.5 | 1488.9 |
| 32.5° | 1433.7 | 1425.9 | 1428.5 | 1420.6 | 1420.6 | 1423.2 | 1418.0 | 1418.0 | 1425.9 | 1420.6 |
| 35°   | 1378.5 | 1360.2 | 1362.8 | 1360.2 | 1362.8 | 1352.3 | 1352.3 | 1349.7 | 1355.0 | 1341.8 |
| 37.5° | 1299.8 | 1292.0 | 1289.3 | 1286.7 | 1289.3 | 1284.0 | 1289.3 | 1281.5 | 1289.3 | 1278.8 |
| 40°   | 1228.9 | 1223.6 | 1226.3 | 1210.5 | 1210.5 | 1213.1 | 1207.9 | 1205.3 | 1207.9 | 1218.4 |
| 42.5° | 1158.0 | 1147.5 | 1142.3 | 1137.0 | 1139.6 | 1131.8 | 1129.1 | 1123.9 | 1129.1 | 1118.6 |
| 45°   | 1073.9 | 1073.9 | 1071.4 | 1058.2 | 1060.9 | 1060.9 | 1050.4 | 1039.9 | 1042.4 | 1042.4 |
| 47.5° | 997.9  | 992.6  | 989.9  | 976.9  | 974.2  | 971.6  | 961.0  | 953.2  | 953.2  | 945.3  |
| 50°   | 913.8  | 908.5  | 900.7  | 887.5  | 882.3  | 866.5  | 858.7  | 848.2  | 837.7  | 837.7  |
| 52.5° | 835.0  | 816.6  | 806.1  | 785.1  | 777.3  | 769.4  | 748.4  | 740.5  | 732.6  | 724.8  |
| 55°   | 740.5  | 724.8  | 703.8  | 680.1  | 669.6  | 656.4  | 635.4  | 619.7  | 609.2  | 611.9  |
| 57.5° | 648.6  | 622.4  | 601.4  | 569.9  | 556.7  | 548.8  | 527.8  | 506.8  | 496.3  | 496.3  |
| 60°   | 535.7  | 514.7  | 488.4  | 459.5  | 449.0  | 435.9  | 409.6  | 396.5  | 388.6  | 380.8  |
| 62.5° | 428.0  | 412.3  | 388.6  | 351.8  | 344.0  | 330.8  | 312.5  | 296.8  | 288.8  | 288.8  |
| 65°   | 320.3  | 304.6  | 283.6  | 257.3  | 246.8  | 236.3  | 220.6  | 204.8  | 196.9  | 194.3  |
| 67.5° | 225.8  | 207.4  | 189.1  | 168.1  | 160.2  | 154.9  | 139.2  | 128.7  | 123.4  | 120.7  |
| 70°   | 136.5  | 126.0  | 112.9  | 97.2   | 89.2   | 84.0   | 73.5   | 65.7   | 63.0   | 60.4   |
| 72.5° | 70.9   | 63.0   | 52.5   | 42.0   | 36.7   | 31.5   | 26.2   | 21.0   | 18.4   | 18.4   |
| 75°   | 26.2   | 21.0   | 13.2   | 7.9    | 5.2    | 5.2    | 5.2    | 5.2    | 5.2    | 5.2    |
| 77.5° | 5.2    | 2.7    | 2.7    | 2.7    | 2.7    | 2.7    | 2.7    | 2.7    | 2.7    | 2.7    |
| 80°   | 2.7    | 2.7    | 2.7    | 2.7    | 2.7    | 2.7    | 2.7    | 2.7    | 2.7    | 2.7    |
| 82.5° | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |
| 85°   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |
| 87.5° | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |
| 90°   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |

(END OF REPORT)