

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: **FLDSQ4C30D010 FEU4C309030 F4LC-CSSQ-MMS**

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: FLDSQ4C30D010 FEU4C309030 F4LC-CSSQ-MMS
 Description: 4 INCH 3000 LUMEN FAIL-SAFE LED DOWNLIGHT WITH, 3000K, 90CRI LEDS AND F4LC-CSSQ TRIM WITH MMS FINISH
 Light Source: -
 Ballast/Driver: -

Summary

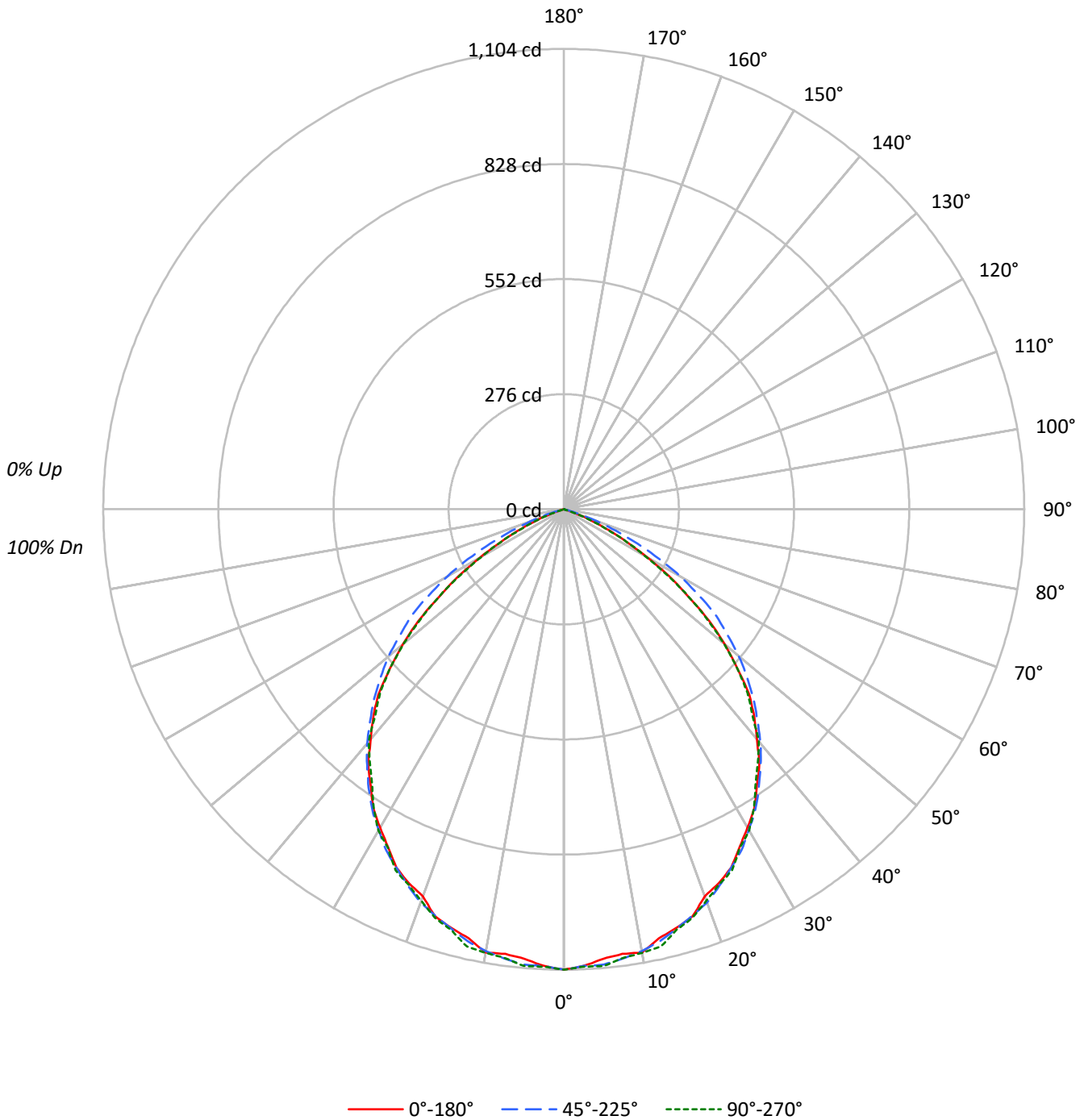
Lumens per Lamp: N/A
 Luminaire Lumens: 2358.0 lumens
 Efficiency: N/A
 Efficacy: 74.6 lumens/watt
 Spacing Criteria (0/90/45): 1.19 / 1.2 / 1.29
 Luminous Opening: Rectangular (W 0.33' x L: 0.33' x H: 0')
 CIE Type: Direct

Input Watts (W): 31.6
 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#
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Luminous Intensity Polar Plot



TEST NUMBER: P#

CATALOG NUMBER: FLDSQ4C30D010 FEU4C309030 F4LC-CSSQ-MMS

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

AVERAGE LUMINANCE (cd/sqm):

| | 0° | 45° | 90° |
|-----|--------|--------|--------|
| 0° | 106514 | 106514 | 106514 |
| 5° | 104790 | 106156 | 106456 |
| 10° | 105698 | 105384 | 105845 |
| 15° | 103848 | 103998 | 104308 |
| 20° | 101429 | 103041 | 102558 |
| 25° | 100991 | 100991 | 101662 |
| 30° | 98180 | 98870 | 99049 |
| 35° | 95116 | 96035 | 94374 |
| 40° | 90651 | 92427 | 91634 |
| 45° | 85790 | 87727 | 84944 |
| 50° | 75550 | 82140 | 75085 |
| 55° | 61200 | 75179 | 61452 |
| 60° | 44771 | 62332 | 43883 |
| 65° | 27215 | 44384 | 26484 |
| 70° | 10608 | 23895 | 10184 |
| 75° | 1156 | 6450 | 1156 |
| 80° | 889 | 889 | 889 |
| 85° | 0 | 0 | 0 |

TEST NUMBER: P#
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ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10° | 104.2 | 4.4 |
| 10°-20° | 294.8 | 12.5 |
| 20°-30° | 437.5 | 18.6 |
| 30°-40° | 506.9 | 21.5 |
| 40°-50° | 486.0 | 20.6 |
| 50°-60° | 357.3 | 15.2 |
| 60°-70° | 154.3 | 6.5 |
| 70°-80° | 16.7 | 0.7 |
| 80°-90° | 0.2 | 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° | 836.5 | 35.5 |
| 0°-40° | 1343.4 | 57.0 |
| 0°-60° | 2186.8 | 92.7 |
| 0°-90° | 2358.0 | 100.0 |
| 90°-120° | 0.0 | 0.0 |
| 90°-150° | 0.0 | 0.0 |
| 90°-180° | 0.0 | 0.0 |
| 0°-180° | 2358.0 | 100.0 |

CANDELA DISTRIBUTION:

| | 0° | 22.5° | 45° | 67.5° | 90° | Flux |
|-----|------|-------|------|-------|------|------|
| 0° | 1104 | 1104 | 1104 | 1104 | 1104 | |
| 5° | 1082 | 1093 | 1096 | 1098 | 1099 | 103 |
| 15° | 1040 | 1046 | 1041 | 1043 | 1044 | 293 |
| 25° | 949 | 947 | 949 | 950 | 955 | 434 |
| 35° | 808 | 812 | 815 | 814 | 801 | 505 |
| 45° | 629 | 630 | 643 | 634 | 622 | 478 |
| 55° | 364 | 401 | 447 | 400 | 365 | 327 |
| 65° | 119 | 149 | 194 | 147 | 116 | 122 |
| 75° | 3 | 5 | 17 | 3 | 3 | 10 |
| 85° | 0 | 0 | 0 | 0 | 0 | 0 |
| 90° | 0 | 0 | 0 | 0 | 0 | |

TEST NUMBER: P#
 CATALOG NUMBER: FLDSQ4C30D010 FEU4C309030 F4LC-CSSQ-MMS

CANDELA DISTRIBUTION (FULL):

| | 0° | 5° | 10° | 15° | 20° | 22.5° | 25° | 30° | 35° | 40° | 45° |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0° | 1103.9 | 1103.9 | 1103.9 | 1103.9 | 1103.9 | 1103.9 | 1103.9 | 1103.9 | 1103.9 | 1103.9 | 1103.9 |
| 2.5° | 1096.0 | 1108.5 | 1110.1 | 1102.3 | 1099.1 | 1094.4 | 1105.4 | 1097.6 | 1100.7 | 1097.6 | 1096.0 |
| 5° | 1081.9 | 1096.0 | 1097.6 | 1097.6 | 1094.4 | 1092.9 | 1097.6 | 1096.0 | 1094.4 | 1091.3 | 1096.0 |
| 7.5° | 1075.6 | 1083.4 | 1091.3 | 1081.9 | 1086.6 | 1085.0 | 1096.0 | 1091.3 | 1089.7 | 1089.7 | 1086.6 |
| 10° | 1078.8 | 1077.2 | 1083.4 | 1074.0 | 1077.2 | 1074.0 | 1083.4 | 1083.4 | 1080.3 | 1077.2 | 1075.6 |
| 12.5° | 1053.6 | 1066.2 | 1066.2 | 1064.6 | 1061.5 | 1056.8 | 1066.2 | 1072.5 | 1063.0 | 1063.0 | 1061.5 |
| 15° | 1039.6 | 1042.7 | 1044.2 | 1044.2 | 1042.7 | 1045.8 | 1050.5 | 1044.2 | 1045.8 | 1038.0 | 1041.1 |
| 17.5° | 1023.9 | 1017.6 | 1022.3 | 1019.2 | 1020.8 | 1023.9 | 1030.2 | 1030.2 | 1020.8 | 1019.2 | 1022.3 |
| 20° | 987.8 | 1006.6 | 1008.2 | 998.8 | 1000.3 | 1000.3 | 1011.3 | 1001.9 | 1008.2 | 1000.3 | 1003.5 |
| 22.5° | 970.5 | 983.1 | 984.7 | 972.1 | 979.9 | 970.5 | 981.5 | 967.4 | 983.1 | 972.1 | 976.8 |
| 25° | 948.6 | 947.1 | 951.7 | 945.5 | 947.1 | 947.1 | 954.9 | 948.6 | 953.3 | 947.1 | 948.6 |
| 27.5° | 912.6 | 925.1 | 923.5 | 917.2 | 920.4 | 918.8 | 934.5 | 917.2 | 926.6 | 918.8 | 922.0 |
| 30° | 881.2 | 892.2 | 889.0 | 882.8 | 882.8 | 878.0 | 895.3 | 890.6 | 889.0 | 889.0 | 887.4 |
| 32.5° | 849.8 | 851.4 | 848.3 | 849.8 | 851.4 | 845.1 | 859.2 | 853.0 | 851.4 | 853.0 | 854.6 |
| 35° | 807.5 | 807.5 | 810.6 | 805.9 | 812.2 | 812.2 | 824.7 | 816.9 | 815.3 | 810.6 | 815.3 |
| 37.5° | 769.9 | 765.2 | 766.7 | 766.7 | 769.9 | 773.0 | 779.3 | 776.1 | 776.1 | 771.4 | 774.6 |
| 40° | 719.7 | 716.6 | 721.2 | 721.2 | 726.0 | 726.0 | 732.2 | 729.1 | 733.8 | 733.8 | 733.8 |
| 42.5° | 675.8 | 675.8 | 672.7 | 677.3 | 678.9 | 677.3 | 688.3 | 686.8 | 688.3 | 685.2 | 686.8 |
| 45° | 628.7 | 628.7 | 625.6 | 624.1 | 631.9 | 630.3 | 642.9 | 638.1 | 644.4 | 641.3 | 642.9 |
| 47.5° | 564.4 | 572.3 | 567.6 | 572.3 | 581.7 | 583.3 | 591.1 | 588.0 | 594.2 | 589.6 | 595.8 |
| 50° | 503.3 | 503.3 | 508.0 | 514.3 | 523.7 | 525.3 | 534.7 | 541.0 | 544.1 | 545.6 | 547.2 |
| 52.5° | 439.0 | 437.4 | 442.2 | 450.0 | 457.9 | 464.1 | 473.5 | 482.9 | 489.2 | 498.6 | 493.9 |
| 55° | 363.8 | 366.9 | 371.6 | 381.0 | 393.6 | 401.4 | 409.2 | 421.8 | 432.8 | 437.4 | 446.9 |
| 57.5° | 299.5 | 296.3 | 299.5 | 312.0 | 326.1 | 332.4 | 343.4 | 355.9 | 371.6 | 381.0 | 384.2 |
| 60° | 232.0 | 233.6 | 236.8 | 247.8 | 258.7 | 268.1 | 272.8 | 293.2 | 307.3 | 316.7 | 323.0 |
| 62.5° | 170.9 | 174.1 | 177.2 | 186.6 | 197.5 | 205.4 | 213.2 | 230.5 | 243.0 | 252.4 | 258.7 |
| 65° | 119.2 | 120.7 | 125.5 | 130.1 | 141.1 | 148.9 | 155.2 | 169.3 | 181.9 | 189.7 | 194.4 |
| 67.5° | 73.7 | 75.2 | 78.4 | 84.7 | 92.5 | 98.8 | 105.0 | 114.4 | 125.5 | 133.3 | 134.9 |
| 70° | 37.6 | 39.2 | 40.8 | 45.5 | 51.8 | 54.9 | 59.6 | 67.4 | 75.2 | 81.5 | 84.7 |
| 72.5° | 12.5 | 12.5 | 14.1 | 17.3 | 20.4 | 23.5 | 25.1 | 32.9 | 39.2 | 42.3 | 43.9 |
| 75° | 3.1 | 3.1 | 3.1 | 3.1 | 3.1 | 4.7 | 4.7 | 9.4 | 12.5 | 15.7 | 17.3 |
| 77.5° | 1.6 | 1.6 | 1.6 | 1.6 | 1.6 | 1.6 | 1.6 | 1.6 | 1.6 | 3.1 | 3.1 |
| 80° | 1.6 | 1.6 | 1.6 | 1.6 | 1.6 | 1.6 | 1.6 | 1.6 | 1.6 | 1.6 | 1.6 |
| 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 |



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CANDELA DISTRIBUTION (continued):

| | 50° | 55° | 60° | 65° | 67.5° | 70° | 75° | 80° | 85° | 90° |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0° | 1103.9 | 1103.9 | 1103.9 | 1103.9 | 1103.9 | 1103.9 | 1103.9 | 1103.9 | 1103.9 | 1103.9 |
| 2.5° | 1103.9 | 1100.7 | 1099.1 | 1100.7 | 1100.7 | 1099.1 | 1103.9 | 1110.1 | 1117.9 | 1097.6 |
| 5° | 1102.3 | 1099.1 | 1102.3 | 1092.9 | 1097.6 | 1094.4 | 1100.7 | 1099.1 | 1105.4 | 1099.1 |
| 7.5° | 1097.6 | 1091.3 | 1092.9 | 1088.2 | 1094.4 | 1086.6 | 1091.3 | 1100.7 | 1094.4 | 1085.0 |
| 10° | 1081.9 | 1078.8 | 1089.7 | 1074.0 | 1070.9 | 1077.2 | 1089.7 | 1080.3 | 1077.2 | 1080.3 |
| 12.5° | 1066.2 | 1066.2 | 1070.9 | 1058.4 | 1059.9 | 1063.0 | 1069.3 | 1063.0 | 1066.2 | 1074.0 |
| 15° | 1049.0 | 1045.8 | 1053.6 | 1044.2 | 1042.7 | 1039.6 | 1045.8 | 1045.8 | 1049.0 | 1044.2 |
| 17.5° | 1028.6 | 1023.9 | 1023.9 | 1020.8 | 1019.2 | 1027.0 | 1030.2 | 1031.7 | 1033.3 | 1027.0 |
| 20° | 1003.5 | 1001.9 | 1006.6 | 1001.9 | 1003.5 | 1005.1 | 1005.1 | 1001.9 | 1016.0 | 998.8 |
| 22.5° | 976.8 | 981.5 | 975.3 | 972.1 | 975.3 | 978.4 | 978.4 | 979.9 | 976.8 | 973.7 |
| 25° | 950.2 | 953.3 | 954.9 | 945.5 | 950.2 | 945.5 | 956.5 | 958.0 | 951.7 | 954.9 |
| 27.5° | 926.6 | 922.0 | 920.4 | 914.1 | 917.2 | 915.7 | 917.2 | 917.2 | 926.6 | 914.1 |
| 30° | 890.6 | 885.9 | 887.4 | 882.8 | 884.3 | 882.8 | 884.3 | 884.3 | 890.6 | 889.0 |
| 32.5° | 856.1 | 851.4 | 853.0 | 848.3 | 848.3 | 849.8 | 846.7 | 846.7 | 851.4 | 848.3 |
| 35° | 823.1 | 812.2 | 813.7 | 812.2 | 813.7 | 807.5 | 807.5 | 805.9 | 809.1 | 801.2 |
| 37.5° | 776.1 | 771.4 | 769.9 | 768.3 | 769.9 | 766.7 | 769.9 | 765.2 | 769.9 | 763.6 |
| 40° | 733.8 | 730.6 | 732.2 | 722.8 | 722.8 | 724.4 | 721.2 | 719.7 | 721.2 | 727.5 |
| 42.5° | 691.5 | 685.2 | 682.1 | 678.9 | 680.5 | 675.8 | 674.2 | 671.1 | 674.2 | 667.9 |
| 45° | 641.3 | 641.3 | 639.7 | 631.9 | 633.5 | 633.5 | 627.2 | 620.9 | 622.5 | 622.5 |
| 47.5° | 595.8 | 592.7 | 591.1 | 583.3 | 581.7 | 580.2 | 573.8 | 569.2 | 569.2 | 564.4 |
| 50° | 545.6 | 542.5 | 537.8 | 530.0 | 526.8 | 517.4 | 512.7 | 506.5 | 500.2 | 500.2 |
| 52.5° | 498.6 | 487.6 | 481.3 | 468.8 | 464.1 | 459.4 | 446.9 | 442.2 | 437.4 | 432.8 |
| 55° | 442.2 | 432.8 | 420.2 | 406.1 | 399.8 | 392.0 | 379.4 | 370.0 | 363.8 | 365.3 |
| 57.5° | 387.3 | 371.6 | 359.1 | 340.3 | 332.4 | 327.7 | 315.1 | 302.6 | 296.3 | 296.3 |
| 60° | 319.9 | 307.3 | 291.7 | 274.4 | 268.1 | 260.3 | 244.6 | 236.8 | 232.0 | 227.4 |
| 62.5° | 255.6 | 246.2 | 232.0 | 210.1 | 205.4 | 197.5 | 186.6 | 177.2 | 172.5 | 172.5 |
| 65° | 191.3 | 181.9 | 169.3 | 153.7 | 147.4 | 141.1 | 131.7 | 122.3 | 117.6 | 116.0 |
| 67.5° | 134.9 | 123.9 | 112.9 | 100.4 | 95.6 | 92.5 | 83.1 | 76.8 | 73.7 | 72.1 |
| 70° | 81.5 | 75.2 | 67.4 | 58.0 | 53.3 | 50.2 | 43.9 | 39.2 | 37.6 | 36.1 |
| 72.5° | 42.3 | 37.6 | 31.3 | 25.1 | 21.9 | 18.8 | 15.7 | 12.5 | 11.0 | 11.0 |
| 75° | 15.7 | 12.5 | 7.9 | 4.7 | 3.1 | 3.1 | 3.1 | 3.1 | 3.1 | 3.1 |
| 77.5° | 3.1 | 1.6 | 1.6 | 1.6 | 1.6 | 1.6 | 1.6 | 1.6 | 1.6 | 1.6 |
| 80° | 1.6 | 1.6 | 1.6 | 1.6 | 1.6 | 1.6 | 1.6 | 1.6 | 1.6 | 1.6 |
| 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)