

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: **FLDSQ4C10D010 FEU4C109035 F4LC-CSSQ-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: FLDSQ4C10D010 FEU4C109035 F4LC-CSSQ-MW
 Description: 4 INCH 1000 LUMEN FAIL-SAFE LED DOWNLIGHT WITH, 3500K, 90CRI LEDS AND F4LC-CSSQ TRIM WITH MW FINISH
 Light Source: -
 Ballast/Driver: -

Summary

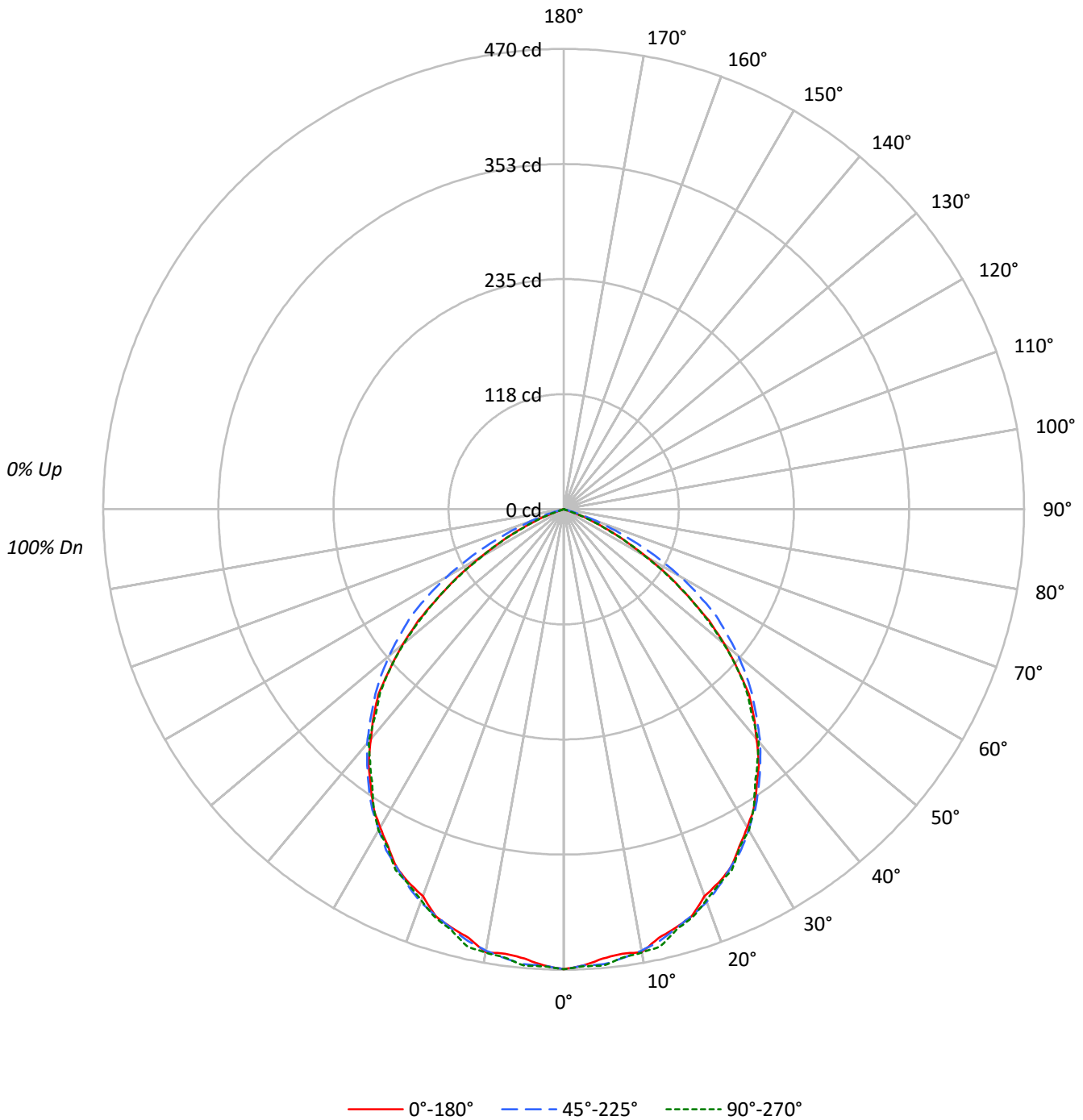
Lumens per Lamp: N/A
 Luminaire Lumens: 1003.0 lumens
 Efficiency: N/A
 Efficacy: 102.9 lumens/watt
 Spacing Criteria (0/90/45): 1.19 / 1.2 / 1.29
 Luminous Opening: Rectangular (W 0.33' x L: 0.33' x H: 0')
 CIE Type: Direct

Input Watts (W): 9.75
 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 |

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Luminous Intensity Polar Plot



TEST NUMBER: P#

CATALOG NUMBER: FLDSQ4C10D010 FEU4C109035 F4LC-CSSQ-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° | 45302 | 45302 | 45302 |
| 5° | 44574 | 45155 | 45281 |
| 10° | 44962 | 44825 | 45021 |
| 15° | 44173 | 44232 | 44372 |
| 20° | 43147 | 43824 | 43629 |
| 25° | 42958 | 42958 | 43246 |
| 30° | 41759 | 42059 | 42137 |
| 35° | 40461 | 40850 | 40143 |
| 40° | 38556 | 39311 | 38984 |
| 45° | 36488 | 37307 | 36134 |
| 50° | 32139 | 34946 | 31943 |
| 55° | 26024 | 31979 | 26142 |
| 60° | 19047 | 26515 | 18661 |
| 65° | 11575 | 18881 | 11279 |
| 70° | 4514 | 10156 | 4316 |
| 75° | 485 | 2721 | 485 |
| 80° | 389 | 389 | 389 |
| 85° | 0 | 0 | 0 |

TEST NUMBER: P#
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ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10° | 44.3 | 4.4 |
| 10°-20° | 125.4 | 12.5 |
| 20°-30° | 186.1 | 18.6 |
| 30°-40° | 215.6 | 21.5 |
| 40°-50° | 206.7 | 20.6 |
| 50°-60° | 152.0 | 15.2 |
| 60°-70° | 65.6 | 6.5 |
| 70°-80° | 7.1 | 0.7 |
| 80°-90° | 0.1 | 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° | 355.8 | 35.5 |
| 0°-40° | 571.4 | 57.0 |
| 0°-60° | 930.2 | 92.7 |
| 0°-90° | 1003.0 | 100.0 |
| 90°-120° | 0.0 | 0.0 |
| 90°-150° | 0.0 | 0.0 |
| 90°-180° | 0.0 | 0.0 |
| 0°-180° | 1003.0 | 100.0 |

CANDELA DISTRIBUTION:

| | 0° | 22.5° | 45° | 67.5° | 90° | Flux |
|-----|-----|-------|-----|-------|-----|------|
| 0° | 470 | 470 | 470 | 470 | 470 | |
| 5° | 460 | 465 | 466 | 467 | 468 | 44 |
| 15° | 442 | 445 | 443 | 444 | 444 | 125 |
| 25° | 404 | 403 | 404 | 404 | 406 | 185 |
| 35° | 344 | 346 | 347 | 346 | 341 | 215 |
| 45° | 267 | 268 | 273 | 269 | 265 | 203 |
| 55° | 155 | 171 | 190 | 170 | 155 | 139 |
| 65° | 51 | 63 | 83 | 63 | 49 | 52 |
| 75° | 1 | 2 | 7 | 1 | 1 | 4 |
| 85° | 0 | 0 | 0 | 0 | 0 | 0 |
| 90° | 0 | 0 | 0 | 0 | 0 | |

TEST NUMBER: P#
 CATALOG NUMBER: FLDSQ4C10D010 FEU4C109035 F4LC-CSSQ-MW

CANDELA DISTRIBUTION (FULL):

| | 0° | 5° | 10° | 15° | 20° | 22.5° | 25° | 30° | 35° | 40° | 45° |
|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 0° | 469.5 | 469.5 | 469.5 | 469.5 | 469.5 | 469.5 | 469.5 | 469.5 | 469.5 | 469.5 | 469.5 |
| 2.5° | 466.2 | 471.5 | 472.2 | 468.9 | 467.5 | 465.5 | 470.2 | 466.9 | 468.2 | 466.9 | 466.2 |
| 5° | 460.2 | 466.2 | 466.9 | 466.9 | 465.5 | 464.9 | 466.9 | 466.2 | 465.5 | 464.2 | 466.2 |
| 7.5° | 457.5 | 460.9 | 464.2 | 460.2 | 462.2 | 461.5 | 466.2 | 464.2 | 463.5 | 463.5 | 462.2 |
| 10° | 458.9 | 458.2 | 460.9 | 456.9 | 458.2 | 456.9 | 460.9 | 460.9 | 459.5 | 458.2 | 457.5 |
| 12.5° | 448.2 | 453.5 | 453.5 | 452.9 | 451.5 | 449.5 | 453.5 | 456.2 | 452.2 | 452.2 | 451.5 |
| 15° | 442.2 | 443.5 | 444.2 | 444.2 | 443.5 | 444.9 | 446.8 | 444.2 | 444.9 | 441.5 | 442.8 |
| 17.5° | 435.5 | 432.9 | 434.8 | 433.5 | 434.2 | 435.5 | 438.2 | 438.2 | 434.2 | 433.5 | 434.8 |
| 20° | 420.2 | 428.2 | 428.9 | 424.9 | 425.5 | 425.5 | 430.2 | 426.2 | 428.9 | 425.5 | 426.8 |
| 22.5° | 412.8 | 418.2 | 418.8 | 413.5 | 416.8 | 412.8 | 417.5 | 411.5 | 418.2 | 413.5 | 415.5 |
| 25° | 403.5 | 402.8 | 404.8 | 402.2 | 402.8 | 402.8 | 406.2 | 403.5 | 405.5 | 402.8 | 403.5 |
| 27.5° | 388.2 | 393.5 | 392.8 | 390.2 | 391.5 | 390.8 | 397.5 | 390.2 | 394.2 | 390.8 | 392.2 |
| 30° | 374.8 | 379.5 | 378.2 | 375.5 | 375.5 | 373.5 | 380.8 | 378.8 | 378.2 | 378.2 | 377.5 |
| 32.5° | 361.5 | 362.2 | 360.8 | 361.5 | 362.2 | 359.5 | 365.5 | 362.8 | 362.2 | 362.8 | 363.5 |
| 35° | 343.5 | 343.5 | 344.8 | 342.8 | 345.5 | 345.5 | 350.8 | 347.5 | 346.8 | 344.8 | 346.8 |
| 37.5° | 327.5 | 325.5 | 326.1 | 326.1 | 327.5 | 328.8 | 331.5 | 330.1 | 330.1 | 328.1 | 329.5 |
| 40° | 306.1 | 304.8 | 306.8 | 306.8 | 308.8 | 308.8 | 311.5 | 310.1 | 312.1 | 312.1 | 312.1 |
| 42.5° | 287.5 | 287.5 | 286.1 | 288.1 | 288.8 | 288.1 | 292.8 | 292.1 | 292.8 | 291.5 | 292.1 |
| 45° | 267.4 | 267.4 | 266.1 | 265.4 | 268.8 | 268.1 | 273.4 | 271.4 | 274.1 | 272.8 | 273.4 |
| 47.5° | 240.1 | 243.4 | 241.4 | 243.4 | 247.4 | 248.1 | 251.4 | 250.1 | 252.8 | 250.8 | 253.4 |
| 50° | 214.1 | 214.1 | 216.1 | 218.8 | 222.8 | 223.4 | 227.4 | 230.1 | 231.4 | 232.1 | 232.8 |
| 52.5° | 186.8 | 186.1 | 188.1 | 191.4 | 194.8 | 197.4 | 201.4 | 205.4 | 208.1 | 212.1 | 210.1 |
| 55° | 154.7 | 156.1 | 158.1 | 162.1 | 167.4 | 170.7 | 174.1 | 179.4 | 184.1 | 186.1 | 190.1 |
| 57.5° | 127.4 | 126.0 | 127.4 | 132.7 | 138.7 | 141.4 | 146.1 | 151.4 | 158.1 | 162.1 | 163.4 |
| 60° | 98.7 | 99.4 | 100.7 | 105.4 | 110.0 | 114.0 | 116.1 | 124.7 | 130.7 | 134.7 | 137.4 |
| 62.5° | 72.7 | 74.0 | 75.4 | 79.4 | 84.0 | 87.4 | 90.7 | 98.0 | 103.4 | 107.4 | 110.0 |
| 65° | 50.7 | 51.3 | 53.4 | 55.3 | 60.0 | 63.3 | 66.0 | 72.0 | 77.4 | 80.7 | 82.7 |
| 67.5° | 31.3 | 32.0 | 33.3 | 36.0 | 39.3 | 42.0 | 44.7 | 48.7 | 53.4 | 56.7 | 57.4 |
| 70° | 16.0 | 16.7 | 17.3 | 19.3 | 22.0 | 23.3 | 25.3 | 28.7 | 32.0 | 34.7 | 36.0 |
| 72.5° | 5.3 | 5.3 | 6.0 | 7.3 | 8.7 | 10.0 | 10.7 | 14.0 | 16.7 | 18.0 | 18.7 |
| 75° | 1.3 | 1.3 | 1.3 | 1.3 | 1.3 | 2.0 | 2.0 | 4.0 | 5.3 | 6.7 | 7.3 |
| 77.5° | 0.7 | 0.7 | 0.7 | 0.7 | 0.7 | 0.7 | 0.7 | 0.7 | 0.7 | 1.3 | 1.3 |
| 80° | 0.7 | 0.7 | 0.7 | 0.7 | 0.7 | 0.7 | 0.7 | 0.7 | 0.7 | 0.7 | 0.7 |
| 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 |

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CANDELA DISTRIBUTION (continued):

| | 50° | 55° | 60° | 65° | 67.5° | 70° | 75° | 80° | 85° | 90° |
|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 0° | 469.5 | 469.5 | 469.5 | 469.5 | 469.5 | 469.5 | 469.5 | 469.5 | 469.5 | 469.5 |
| 2.5° | 469.5 | 468.2 | 467.5 | 468.2 | 468.2 | 467.5 | 469.5 | 472.2 | 475.5 | 466.9 |
| 5° | 468.9 | 467.5 | 468.9 | 464.9 | 466.9 | 465.5 | 468.2 | 467.5 | 470.2 | 467.5 |
| 7.5° | 466.9 | 464.2 | 464.9 | 462.9 | 465.5 | 462.2 | 464.2 | 468.2 | 465.5 | 461.5 |
| 10° | 460.2 | 458.9 | 463.5 | 456.9 | 455.5 | 458.2 | 463.5 | 459.5 | 458.2 | 459.5 |
| 12.5° | 453.5 | 453.5 | 455.5 | 450.2 | 450.8 | 452.2 | 454.8 | 452.2 | 453.5 | 456.9 |
| 15° | 446.2 | 444.9 | 448.2 | 444.2 | 443.5 | 442.2 | 444.9 | 444.9 | 446.2 | 444.2 |
| 17.5° | 437.5 | 435.5 | 435.5 | 434.2 | 433.5 | 436.9 | 438.2 | 438.8 | 439.5 | 436.9 |
| 20° | 426.8 | 426.2 | 428.2 | 426.2 | 426.8 | 427.5 | 427.5 | 426.2 | 432.2 | 424.9 |
| 22.5° | 415.5 | 417.5 | 414.8 | 413.5 | 414.8 | 416.2 | 416.2 | 416.8 | 415.5 | 414.2 |
| 25° | 404.2 | 405.5 | 406.2 | 402.2 | 404.2 | 402.2 | 406.8 | 407.5 | 404.8 | 406.2 |
| 27.5° | 394.2 | 392.2 | 391.5 | 388.8 | 390.2 | 389.5 | 390.2 | 390.2 | 394.2 | 388.8 |
| 30° | 378.8 | 376.8 | 377.5 | 375.5 | 376.1 | 375.5 | 376.1 | 376.1 | 378.8 | 378.2 |
| 32.5° | 364.1 | 362.2 | 362.8 | 360.8 | 360.8 | 361.5 | 360.1 | 360.1 | 362.2 | 360.8 |
| 35° | 350.1 | 345.5 | 346.1 | 345.5 | 346.1 | 343.5 | 343.5 | 342.8 | 344.1 | 340.8 |
| 37.5° | 330.1 | 328.1 | 327.5 | 326.8 | 327.5 | 326.1 | 327.5 | 325.5 | 327.5 | 324.8 |
| 40° | 312.1 | 310.8 | 311.5 | 307.5 | 307.5 | 308.1 | 306.8 | 306.1 | 306.8 | 309.5 |
| 42.5° | 294.1 | 291.5 | 290.1 | 288.8 | 289.4 | 287.5 | 286.8 | 285.4 | 286.8 | 284.1 |
| 45° | 272.8 | 272.8 | 272.1 | 268.8 | 269.4 | 269.4 | 266.8 | 264.1 | 264.8 | 264.8 |
| 47.5° | 253.4 | 252.1 | 251.4 | 248.1 | 247.4 | 246.8 | 244.1 | 242.1 | 242.1 | 240.1 |
| 50° | 232.1 | 230.8 | 228.8 | 225.4 | 224.1 | 220.1 | 218.1 | 215.4 | 212.8 | 212.8 |
| 52.5° | 212.1 | 207.4 | 204.7 | 199.4 | 197.4 | 195.4 | 190.1 | 188.1 | 186.1 | 184.1 |
| 55° | 188.1 | 184.1 | 178.8 | 172.7 | 170.1 | 166.7 | 161.4 | 157.4 | 154.7 | 155.4 |
| 57.5° | 164.7 | 158.1 | 152.7 | 144.7 | 141.4 | 139.4 | 134.0 | 128.7 | 126.0 | 126.0 |
| 60° | 136.1 | 130.7 | 124.1 | 116.7 | 114.0 | 110.7 | 104.0 | 100.7 | 98.7 | 96.7 |
| 62.5° | 108.7 | 104.7 | 98.7 | 89.4 | 87.4 | 84.0 | 79.4 | 75.4 | 73.4 | 73.4 |
| 65° | 81.4 | 77.4 | 72.0 | 65.4 | 62.7 | 60.0 | 56.0 | 52.0 | 50.0 | 49.4 |
| 67.5° | 57.4 | 52.7 | 48.0 | 42.7 | 40.7 | 39.3 | 35.3 | 32.7 | 31.3 | 30.7 |
| 70° | 34.7 | 32.0 | 28.7 | 24.7 | 22.7 | 21.3 | 18.7 | 16.7 | 16.0 | 15.3 |
| 72.5° | 18.0 | 16.0 | 13.3 | 10.7 | 9.3 | 8.0 | 6.7 | 5.3 | 4.7 | 4.7 |
| 75° | 6.7 | 5.3 | 3.3 | 2.0 | 1.3 | 1.3 | 1.3 | 1.3 | 1.3 | 1.3 |
| 77.5° | 1.3 | 0.7 | 0.7 | 0.7 | 0.7 | 0.7 | 0.7 | 0.7 | 0.7 | 0.7 |
| 80° | 0.7 | 0.7 | 0.7 | 0.7 | 0.7 | 0.7 | 0.7 | 0.7 | 0.7 | 0.7 |
| 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)