

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: HALO

Report Number: P886653

Luminaire Tested: ML310LSFL9FS1E-TIR4D25AWW-TL3RWSL-1000LM-3000K

Issue Date: 7/5/2024

Test Information

Test Method: LM-79-2019
Report Number: P886653
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G3-2402-314-11)
Test Lab: COOPER LIGHTING SOLUTIONS
Issue Date: 7/5/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: HALO
Catalog Number: ML310LSFL9FS1E-TIR4D25AWW-TL3RWSL-1000LM-3000K
Description: 3IN ROUND ML FLEX, SELECTABLE CCT, WITH WW TIR, METALLIC SILVER TRIM
Light Source: (1) STANDARD SELECTABLE LUMEN LED 90CRI / 3000K CCT
Ballast/Driver: -

Summary

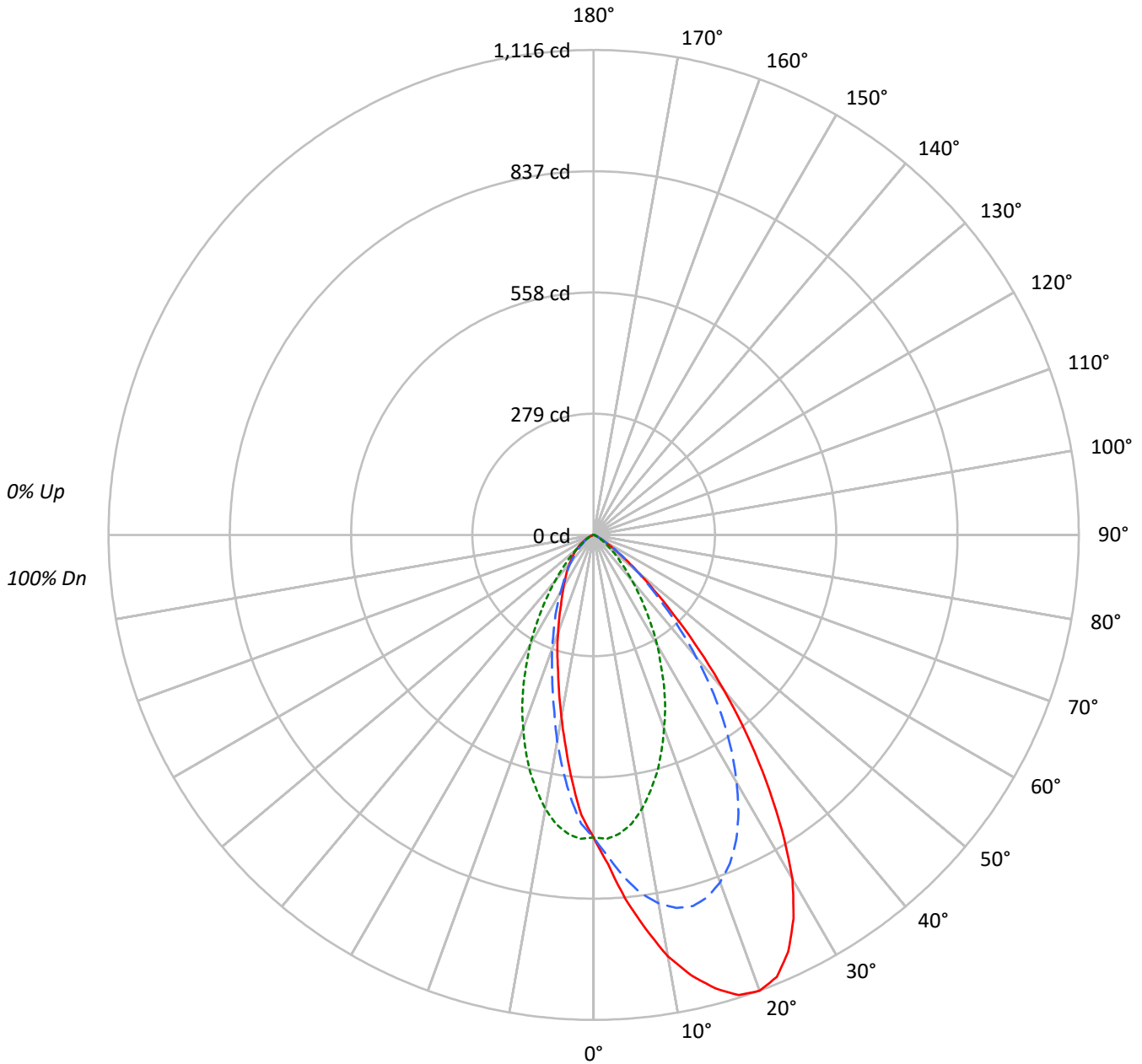
Lumens per Lamp: N/A
Luminaire Lumens: 821.0 lumens
Efficiency: N/A
Efficacy: 59.5 lumens/watt
Spacing Criteria (0/90/45): 1.14 / 0.81 / 0.99
Luminous Opening: Circular (Dia: 0.25' x H: 0')
CIE Type: Direct

Input Watts (W): 13.8
Input Voltage (V): NR
Input Current (A_{in}): 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: 24 FT



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Luminous Intensity Polar Plot





TEST NUMBER: P886653

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COEFFICIENT OF UTILIZATION - ZONAL CAVITY METHOD:

| | | | | | | | | | | | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|----|----|----|----|-----|---|--|---|
| RF | 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 | 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 | 113 | 110 | 107 | 104 | 110 | 108 | 105 | 103 | 103 | 101 | 100 | 100 | 98 | 97 | 96 | 95 | 94 | 92 | | | | | 92 | | | |
| 2 | 106 | 101 | 96 | 92 | 104 | 99 | 95 | 91 | 96 | 92 | 89 | 93 | 90 | 87 | 90 | 88 | 86 | 84 | | | | | 84 | | | |
| 3 | 100 | 93 | 87 | 83 | 98 | 91 | 86 | 82 | 89 | 84 | 81 | 86 | 82 | 79 | 84 | 81 | 78 | 76 | | | | | 76 | | | |
| 4 | 94 | 86 | 79 | 75 | 92 | 84 | 79 | 74 | 82 | 77 | 73 | 80 | 76 | 72 | 78 | 74 | 71 | 70 | | | | | 70 | | | |
| 5 | 89 | 79 | 73 | 68 | 87 | 78 | 72 | 67 | 76 | 71 | 67 | 75 | 70 | 66 | 73 | 69 | 66 | 64 | | | | | 64 | | | |
| 6 | 83 | 73 | 67 | 62 | 82 | 73 | 66 | 62 | 71 | 65 | 61 | 70 | 65 | 61 | 68 | 64 | 60 | 59 | | | | | 59 | | | |
| 7 | 79 | 68 | 62 | 57 | 77 | 68 | 61 | 57 | 66 | 61 | 56 | 65 | 60 | 56 | 64 | 59 | 56 | 54 | | | | | 54 | | | |
| 8 | 74 | 64 | 57 | 52 | 73 | 63 | 57 | 52 | 62 | 56 | 52 | 61 | 56 | 52 | 60 | 55 | 52 | 50 | | | | | 50 | | | |
| 9 | 70 | 60 | 53 | 49 | 69 | 59 | 53 | 49 | 58 | 52 | 48 | 57 | 52 | 48 | 56 | 51 | 48 | 47 | | | | | 47 | | | |
| 10 | 67 | 56 | 50 | 45 | 66 | 55 | 49 | 45 | 55 | 49 | 45 | 54 | 49 | 45 | 53 | 48 | 45 | 43 | | | | | 43 | | | |

AVERAGE LUMINANCE (cd/sqm):

| | 0° | 45° | 90° | 135° | 180° |
|-----|--------|--------|--------|--------|--------|
| 0° | 152619 | 152619 | 152619 | 152619 | 152619 |
| 5° | 185119 | 173717 | 151838 | 133590 | 125159 |
| 10° | 219301 | 191635 | 142527 | 107457 | 94788 |
| 15° | 245223 | 200671 | 128151 | 82770 | 71941 |
| 20° | 260539 | 198421 | 110446 | 65012 | 55818 |
| 25° | 256104 | 187692 | 92473 | 50616 | 42849 |
| 30° | 231555 | 166659 | 74214 | 38538 | 35145 |
| 35° | 184922 | 139039 | 55171 | 29393 | 29393 |
| 40° | 133107 | 105097 | 39417 | 22814 | 24618 |
| 45° | 81900 | 70829 | 26669 | 17676 | 20870 |
| 50° | 45235 | 43819 | 18012 | 13066 | 16955 |
| 55° | 22556 | 25137 | 11469 | 9902 | 13457 |
| 60° | 10438 | 12499 | 8157 | 7280 | 9999 |
| 65° | 4825 | 5915 | 5915 | 4825 | 5915 |
| 70° | 1988 | 2981 | 3975 | 2629 | 3334 |
| 75° | 847 | 1779 | 1779 | 1779 | 1779 |
| 80° | 0 | 0 | 1263 | 1263 | 1263 |
| 85° | 0 | 0 | 0 | 0 | 0 |

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 20°

Vertical Angle: 45°

Luminance: 82210 cd/sqm



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ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10° | 65.8 | 8.0 |
| 10°-20° | 176.3 | 21.5 |
| 20°-30° | 226.4 | 27.6 |
| 30°-40° | 192.4 | 23.4 |
| 40°-50° | 106.0 | 12.9 |
| 50°-60° | 39.9 | 4.9 |
| 60°-70° | 11.6 | 1.4 |
| 70°-80° | 2.4 | 0.3 |
| 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° | 468.5 | 57.1 |
| 0°-40° | 660.9 | 80.5 |
| 0°-60° | 806.8 | 98.3 |
| 0°-90° | 821.0 | 100.0 |
| 90°-120° | 0.0 | 0.0 |
| 90°-150° | 0.0 | 0.0 |
| 90°-180° | 0.0 | 0.0 |
| 0°-180° | 821.0 | 100.0 |

CANDELA DISTRIBUTION:

| | 0° | 45° | 90° | 135° | 180° | Flux |
|-----|------|-----|-----|------|------|------|
| 0° | 696 | 696 | 696 | 696 | 696 | |
| 5° | 841 | 789 | 690 | 607 | 569 | 84 |
| 15° | 1080 | 884 | 564 | 365 | 317 | 305 |
| 25° | 1058 | 776 | 382 | 209 | 177 | 480 |
| 35° | 691 | 519 | 206 | 110 | 110 | 429 |
| 45° | 264 | 228 | 86 | 57 | 67 | 211 |
| 55° | 59 | 66 | 30 | 26 | 35 | 59 |
| 65° | 9 | 11 | 11 | 9 | 11 | 10 |
| 75° | 1 | 2 | 2 | 2 | 2 | 1 |
| 85° | 0 | 0 | 0 | 0 | 0 | 0 |
| 90° | 0 | 0 | 0 | 0 | 0 | |



TEST NUMBER: P886653

CATALOG NUMBER: ML310LSFL9FS1E-TIR4D25AWW-TL3RWSL-1000LM-3000K

CANDELA DISTRIBUTION (FULL):

| | 0° | 10° | 20° | 30° | 40° | 50° | 60° | 70° | 80° | 90° | 112.5° |
|-------|--------|--------|--------|-------|-------|-------|-------|-------|-------|-------|--------|
| 0° | 696.0 | 696.0 | 696.0 | 696.0 | 696.0 | 696.0 | 696.0 | 696.0 | 696.0 | 696.0 | 696.0 |
| 2.5° | 758.1 | 758.1 | 756.1 | 750.9 | 743.6 | 737.4 | 727.1 | 718.8 | 709.5 | 700.1 | 679.4 |
| 5° | 841.0 | 837.9 | 828.6 | 816.1 | 800.6 | 777.8 | 756.1 | 735.3 | 711.5 | 689.8 | 642.1 |
| 7.5° | 913.5 | 909.3 | 896.9 | 873.1 | 848.2 | 815.1 | 777.8 | 740.5 | 704.3 | 670.1 | 598.6 |
| 10° | 984.9 | 975.6 | 957.0 | 924.9 | 884.5 | 836.8 | 786.1 | 736.4 | 685.6 | 640.1 | 553.1 |
| 12.5° | 1037.8 | 1029.5 | 1003.6 | 964.2 | 909.3 | 849.3 | 784.0 | 719.8 | 658.7 | 602.8 | 501.3 |
| 15° | 1080.2 | 1069.9 | 1036.7 | 986.0 | 919.7 | 848.2 | 769.5 | 697.0 | 626.6 | 564.5 | 448.5 |
| 17.5° | 1110.3 | 1094.7 | 1054.3 | 991.2 | 914.5 | 831.7 | 749.8 | 663.9 | 589.3 | 519.9 | 397.7 |
| 20° | 1116.5 | 1103.0 | 1056.4 | 986.0 | 895.9 | 804.7 | 712.6 | 624.5 | 544.8 | 473.3 | 350.1 |
| 22.5° | 1100.9 | 1086.4 | 1036.7 | 962.2 | 869.0 | 768.5 | 673.2 | 583.1 | 498.2 | 429.8 | 306.6 |
| 25° | 1058.5 | 1044.0 | 994.3 | 920.7 | 827.5 | 724.0 | 621.4 | 532.3 | 452.6 | 382.2 | 264.1 |
| 27.5° | 995.3 | 973.6 | 934.2 | 861.7 | 771.6 | 671.1 | 568.6 | 480.6 | 399.8 | 333.5 | 224.7 |
| 30° | 914.5 | 886.6 | 853.4 | 790.2 | 705.3 | 611.1 | 512.7 | 425.7 | 351.1 | 293.1 | 192.6 |
| 32.5° | 805.8 | 795.4 | 760.2 | 707.4 | 635.9 | 545.8 | 454.7 | 373.9 | 303.5 | 246.5 | 164.7 |
| 35° | 690.8 | 680.5 | 661.8 | 618.3 | 558.2 | 480.6 | 395.6 | 318.0 | 256.9 | 206.1 | 135.7 |
| 37.5° | 579.0 | 568.6 | 552.0 | 525.1 | 473.3 | 413.2 | 337.6 | 270.3 | 215.4 | 169.9 | 112.9 |
| 40° | 465.0 | 460.9 | 447.4 | 427.7 | 391.5 | 342.8 | 281.7 | 223.7 | 175.0 | 137.7 | 91.1 |
| 42.5° | 358.4 | 356.3 | 347.0 | 335.6 | 312.8 | 273.4 | 232.0 | 180.2 | 138.8 | 109.8 | 72.5 |
| 45° | 264.1 | 258.9 | 265.1 | 255.8 | 242.4 | 214.4 | 178.1 | 139.8 | 106.7 | 86.0 | 57.0 |
| 47.5° | 188.5 | 189.5 | 192.6 | 194.7 | 184.4 | 161.6 | 133.6 | 102.5 | 82.9 | 70.4 | 46.6 |
| 50° | 132.6 | 131.5 | 138.8 | 145.0 | 135.7 | 121.2 | 96.3 | 78.7 | 63.2 | 52.8 | 37.3 |
| 52.5° | 91.1 | 92.2 | 100.5 | 104.6 | 102.5 | 86.0 | 68.4 | 54.9 | 46.6 | 39.4 | 29.0 |
| 55° | 59.0 | 62.1 | 68.4 | 73.5 | 72.5 | 59.0 | 47.6 | 39.4 | 35.2 | 30.0 | 22.8 |
| 57.5° | 38.3 | 39.4 | 45.6 | 49.7 | 48.7 | 39.4 | 32.1 | 29.0 | 25.9 | 22.8 | 16.6 |
| 60° | 23.8 | 24.9 | 29.0 | 33.1 | 31.1 | 25.9 | 21.7 | 20.7 | 19.7 | 18.6 | 14.5 |
| 62.5° | 14.5 | 15.5 | 18.6 | 21.7 | 19.7 | 16.6 | 14.5 | 15.5 | 15.5 | 14.5 | 11.4 |
| 65° | 9.3 | 9.3 | 11.4 | 13.5 | 12.4 | 10.4 | 10.4 | 11.4 | 12.4 | 11.4 | 9.3 |
| 67.5° | 5.2 | 6.2 | 7.2 | 8.3 | 7.2 | 7.2 | 8.3 | 9.3 | 9.3 | 9.3 | 7.2 |
| 70° | 3.1 | 4.1 | 4.1 | 4.1 | 4.1 | 5.2 | 5.2 | 6.2 | 7.2 | 6.2 | 5.2 |
| 72.5° | 2.1 | 2.1 | 2.1 | 3.1 | 3.1 | 3.1 | 3.1 | 4.1 | 4.1 | 4.1 | 4.1 |
| 75° | 1.0 | 1.0 | 1.0 | 1.0 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 |
| 77.5° | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |
| 80° | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 1.0 | 1.0 | 1.0 | 1.0 |
| 82.5° | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 1.0 | 1.0 | 1.0 |
| 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):

| | 135° | 157.5° | 180° |
|-------|-------|--------|-------|
| 0° | 696.0 | 696.0 | 696.0 |
| 2.5° | 664.9 | 654.6 | 645.2 |
| 5° | 606.9 | 582.1 | 568.6 |
| 7.5° | 543.7 | 505.4 | 492.0 |
| 10° | 482.6 | 436.0 | 425.7 |
| 12.5° | 418.4 | 380.1 | 367.7 |
| 15° | 364.6 | 328.3 | 316.9 |
| 17.5° | 318.0 | 284.8 | 277.6 |
| 20° | 278.6 | 248.6 | 239.2 |
| 22.5° | 240.3 | 213.4 | 206.1 |
| 25° | 209.2 | 185.4 | 177.1 |
| 27.5° | 179.2 | 159.5 | 156.4 |
| 30° | 152.2 | 139.8 | 138.8 |
| 32.5° | 129.5 | 121.2 | 123.2 |
| 35° | 109.8 | 106.7 | 109.8 |
| 37.5° | 95.3 | 94.2 | 97.4 |
| 40° | 79.7 | 81.8 | 86.0 |
| 42.5° | 67.3 | 72.5 | 76.6 |
| 45° | 57.0 | 64.2 | 67.3 |
| 47.5° | 46.6 | 55.9 | 59.0 |
| 50° | 38.3 | 48.7 | 49.7 |
| 52.5° | 31.1 | 40.4 | 42.5 |
| 55° | 25.9 | 33.1 | 35.2 |
| 57.5° | 21.7 | 26.9 | 28.0 |
| 60° | 16.6 | 20.7 | 22.8 |
| 62.5° | 12.4 | 16.6 | 16.6 |
| 65° | 9.3 | 11.4 | 11.4 |
| 67.5° | 6.2 | 8.3 | 8.3 |
| 70° | 4.1 | 5.2 | 5.2 |
| 72.5° | 3.1 | 3.1 | 3.1 |
| 75° | 2.1 | 2.1 | 2.1 |
| 77.5° | 1.0 | 1.0 | 1.0 |
| 80° | 1.0 | 1.0 | 1.0 |
| 82.5° | 1.0 | 1.0 | 1.0 |
| 85° | 0.0 | 0.0 | 0.0 |
| 87.5° | 0.0 | 0.0 | 0.0 |
| 90° | 0.0 | 0.0 | 0.0 |

Signify Classified - Internal
Cooper Lighting Solutions Photometric Lab
1121 Highway 74 South
Peachtree City, GA 30269

Scaled Data Report



Report Generated By 670245859 / DESKTOP-T8S5UU9

Signify Classified - Internal
Cooper Lighting Solutions Photometric Lab
1121 Highway 74 South
Peachtree City, GA 30269

Scaled Data Report





— 0°-180° - - 45°-225° - - - - 90°-270°

Signify Classified - Internal
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Scaled Data Report



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Scaled Data Report



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Scaled Data Report



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Scaled Data Report



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