

Scaled data based on original data using
LM-79-08 Approved Method: Electrical and Photometric Measurements of Solid-State
Lighting Products

Test Report Prepared for

Cooper Lighting Solutions

(formerly Eaton)

Brand: NEO-RAY

Report Number: P231561

Luminaire Tested: **S123-DR-1-35-X-0048-1-U-DD-3-W**

Issue Date: 3/3/2020

Test Information

Test Method: LM-79-08
Report Number: P231561
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (P29684)
Test Lab: INNOVATION CENTER-P2
Issue Date: 3/3/2020
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: NEO-RAY
Catalog Number: S123-DR-1-35-X-0048-1-U-DD-3-W
Description: DEFINE 3 LED LINEAR DIRECT RECESSED LED LUMINAIRE WITH ASYMMETRIC LENS.
Light Source: 3500K CCT, 80 CRI LEDS
Ballast/Driver: ELECTRONIC DRIVER

Summary

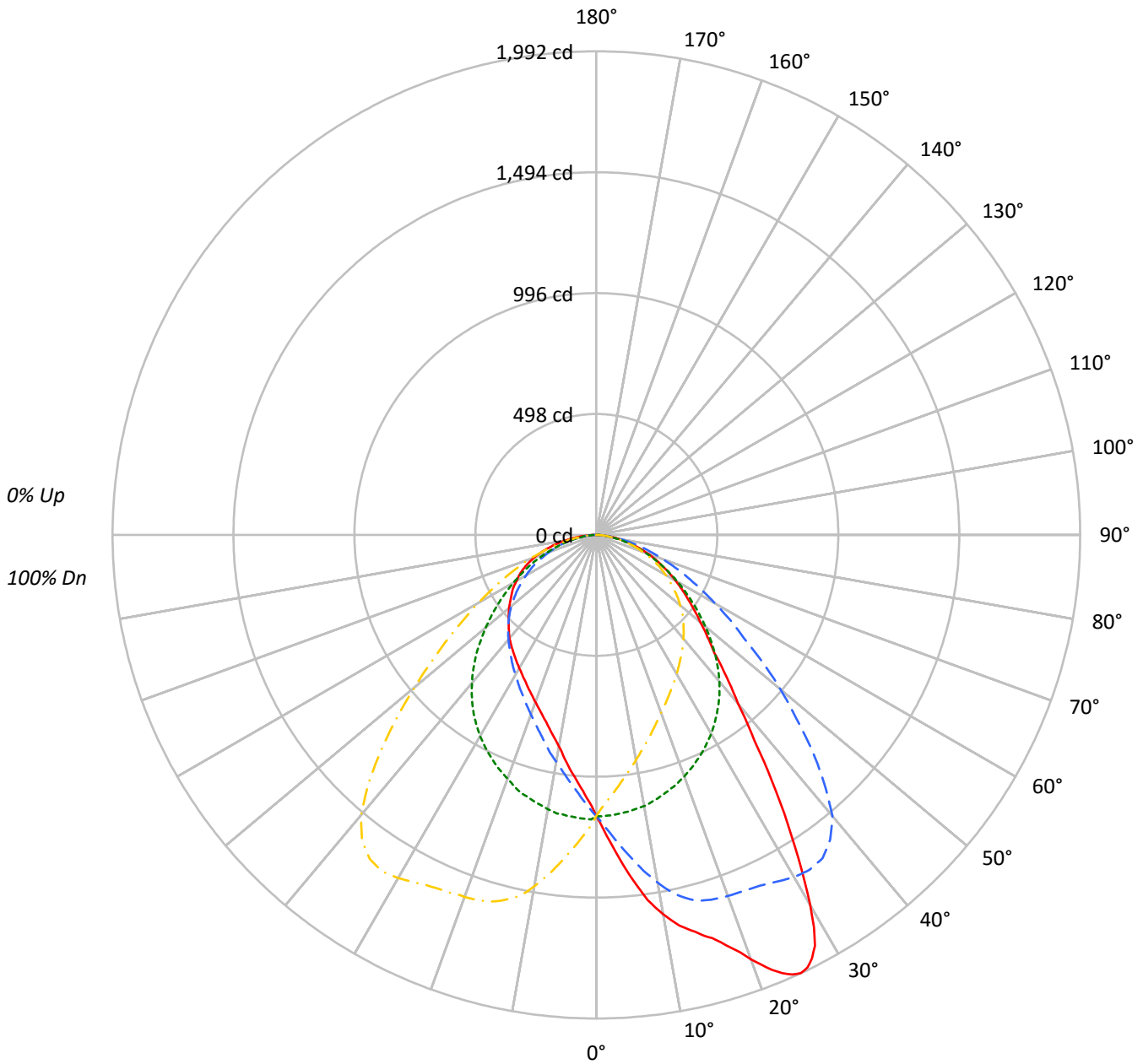
Lumens per Lamp: N/A
Luminaire Lumens: 3176.7 lumens
Efficiency: N/A
Efficacy: 113.9 lumens/watt
Spacing Criteria (0/90/45): 1.33 / 1.22 / 1.46
Luminous Opening: Rectangular (W 3.92' x L: 0.22' x H: 0')
CIE Type: Direct

Input Watts (W): 27.9
Input Voltage (V): 120
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



TEST NUMBER: P231561
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Luminous Intensity Polar Plot



— 0°-180° - - 45°-225° - · - · 90°-270° - · - · 135°-315°



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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 | 109 | 105 | 101 | 97 | 107 | 103 | 99 | 96 | 98 | 95 | 93 | 95 | 92 | 90 | 91 | 89 | 87 | 85 |
| 2 | 100 | 92 | 86 | 80 | 98 | 90 | 84 | 79 | 87 | 82 | 78 | 84 | 79 | 76 | 81 | 77 | 74 | 72 |
| 3 | 92 | 82 | 74 | 68 | 89 | 80 | 73 | 67 | 77 | 71 | 66 | 74 | 69 | 65 | 72 | 67 | 64 | 61 |
| 4 | 84 | 73 | 64 | 58 | 82 | 71 | 64 | 57 | 69 | 62 | 57 | 67 | 61 | 56 | 65 | 59 | 55 | 53 |
| 5 | 78 | 65 | 57 | 50 | 76 | 64 | 56 | 50 | 62 | 55 | 49 | 60 | 54 | 49 | 58 | 53 | 48 | 46 |
| 6 | 72 | 59 | 50 | 44 | 70 | 58 | 50 | 44 | 56 | 49 | 44 | 55 | 48 | 43 | 53 | 47 | 43 | 41 |
| 7 | 67 | 54 | 45 | 39 | 65 | 53 | 45 | 39 | 51 | 44 | 39 | 50 | 43 | 39 | 49 | 43 | 38 | 36 |
| 8 | 62 | 49 | 41 | 35 | 61 | 48 | 41 | 35 | 47 | 40 | 35 | 46 | 39 | 35 | 45 | 39 | 34 | 33 |
| 9 | 58 | 45 | 37 | 32 | 57 | 45 | 37 | 32 | 43 | 36 | 31 | 42 | 36 | 31 | 41 | 35 | 31 | 29 |
| 10 | 55 | 42 | 34 | 29 | 53 | 41 | 34 | 29 | 40 | 33 | 29 | 39 | 33 | 29 | 38 | 33 | 28 | 27 |

AVERAGE LUMINANCE (cd/sqm):

| | 0° | 90° | 180° | 270° |
|-----|-------|-------|-------|-------|
| 0° | 14252 | 14252 | 14252 | 14252 |
| 5° | 17061 | 14220 | 12404 | 14393 |
| 10° | 19833 | 14172 | 11060 | 14334 |
| 15° | 21775 | 14016 | 10168 | 14194 |
| 20° | 24374 | 13870 | 9600 | 14001 |
| 25° | 27050 | 13675 | 9221 | 13810 |
| 30° | 25012 | 13430 | 9010 | 13600 |
| 35° | 19396 | 13101 | 8924 | 13282 |
| 40° | 14572 | 12660 | 8933 | 12805 |
| 45° | 11957 | 12010 | 8877 | 12184 |
| 50° | 10703 | 11201 | 8980 | 11373 |
| 55° | 9870 | 10342 | 9119 | 10557 |
| 60° | 9255 | 9501 | 9354 | 9698 |
| 65° | 8649 | 8678 | 9668 | 8911 |
| 70° | 8132 | 7737 | 9788 | 7952 |
| 75° | 7370 | 6752 | 9558 | 6990 |
| 80° | 6520 | 5528 | 8930 | 5812 |
| 85° | 5225 | 4095 | 8049 | 4519 |



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ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10° | 112.6 | 3.5 |
| 10°-20° | 337.4 | 10.6 |
| 20°-30° | 537.9 | 16.9 |
| 30°-40° | 619.5 | 19.5 |
| 40°-50° | 564.3 | 17.8 |
| 50°-60° | 457.4 | 14.4 |
| 60°-70° | 324.9 | 10.2 |
| 70°-80° | 176.2 | 5.5 |
| 80°-90° | 46.6 | 1.5 |
| 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° | 987.9 | 31.1 |
| 0°-40° | 1607.4 | 50.6 |
| 0°-60° | 2629.1 | 82.8 |
| 0°-90° | 3176.7 | 100.0 |
| 90°-120° | 0.0 | 0.0 |
| 90°-150° | 0.0 | 0.0 |
| 90°-180° | 0.0 | 0.0 |
| 0°-180° | 3176.7 | 100.0 |

CANDELA DISTRIBUTION:

| | 0° | 90° | 180° | 270° | 360° | Flux |
|-----|------|------|------|------|------|------|
| 0° | 1158 | 1158 | 1158 | 1158 | 1158 | |
| 5° | 1381 | 1151 | 1004 | 1165 | 1381 | 139 |
| 15° | 1709 | 1100 | 798 | 1114 | 1709 | 490 |
| 25° | 1992 | 1007 | 679 | 1017 | 1992 | 892 |
| 35° | 1291 | 872 | 594 | 884 | 1291 | 808 |
| 45° | 687 | 690 | 510 | 700 | 687 | 545 |
| 55° | 460 | 482 | 425 | 492 | 460 | 414 |
| 65° | 297 | 298 | 332 | 306 | 297 | 296 |
| 75° | 155 | 142 | 201 | 147 | 155 | 165 |
| 85° | 37 | 29 | 57 | 32 | 37 | 44 |
| 90° | 0 | 0 | 0 | 0 | 0 | |



TEST NUMBER: P231561

CATALOG NUMBER: S123-DR-1-35-X-0048-1-U-DD-3-W

CANDELA DISTRIBUTION (FULL):

| | 0° | 22.5° | 45° | 67.5° | 90° | 112.5° | 135° | 157.5° | 180° | 202.5° | 225° |
|-------|------|-------|------|-------|------|--------|------|--------|------|--------|------|
| 0° | 1158 | 1158 | 1158 | 1158 | 1158 | 1158 | 1158 | 1158 | 1158 | 1158 | 1158 |
| 1° | 1196 | 1188 | 1183 | 1162 | 1159 | 1137 | 1128 | 1120 | 1117 | 1122 | 1137 |
| 2° | 1241 | 1226 | 1211 | 1176 | 1157 | 1123 | 1105 | 1090 | 1086 | 1092 | 1112 |
| 3° | 1285 | 1265 | 1241 | 1190 | 1157 | 1110 | 1082 | 1061 | 1056 | 1063 | 1090 |
| 4° | 1332 | 1307 | 1271 | 1203 | 1154 | 1096 | 1060 | 1035 | 1030 | 1036 | 1067 |
| 5° | 1381 | 1350 | 1302 | 1217 | 1151 | 1079 | 1039 | 1009 | 1004 | 1010 | 1045 |
| 6° | 1426 | 1393 | 1333 | 1231 | 1149 | 1069 | 1018 | 986 | 981 | 986 | 1025 |
| 7° | 1473 | 1437 | 1365 | 1244 | 1145 | 1054 | 998 | 963 | 957 | 964 | 1005 |
| 8° | 1518 | 1478 | 1397 | 1257 | 1141 | 1040 | 979 | 941 | 933 | 941 | 986 |
| 9° | 1554 | 1514 | 1425 | 1269 | 1137 | 1026 | 960 | 920 | 906 | 920 | 967 |
| 10° | 1587 | 1548 | 1455 | 1281 | 1134 | 1012 | 941 | 899 | 885 | 899 | 949 |
| 11° | 1617 | 1577 | 1482 | 1292 | 1129 | 999 | 923 | 880 | 866 | 879 | 933 |
| 12° | 1645 | 1604 | 1506 | 1307 | 1121 | 986 | 905 | 861 | 848 | 860 | 918 |
| 13° | 1666 | 1625 | 1526 | 1315 | 1115 | 970 | 888 | 844 | 831 | 843 | 898 |
| 14° | 1685 | 1646 | 1543 | 1324 | 1107 | 955 | 871 | 826 | 814 | 827 | 879 |
| 15° | 1709 | 1663 | 1558 | 1332 | 1100 | 941 | 856 | 810 | 798 | 811 | 862 |
| 16° | 1728 | 1680 | 1567 | 1339 | 1092 | 927 | 839 | 795 | 784 | 797 | 846 |
| 17° | 1755 | 1697 | 1573 | 1344 | 1085 | 913 | 823 | 781 | 770 | 782 | 831 |
| 18° | 1787 | 1714 | 1577 | 1347 | 1077 | 899 | 808 | 767 | 757 | 767 | 815 |
| 19° | 1819 | 1735 | 1581 | 1350 | 1067 | 884 | 794 | 754 | 745 | 753 | 801 |
| 20° | 1861 | 1758 | 1583 | 1349 | 1059 | 871 | 780 | 742 | 733 | 740 | 787 |
| 21° | 1897 | 1784 | 1585 | 1345 | 1048 | 856 | 767 | 730 | 722 | 728 | 774 |
| 22° | 1932 | 1812 | 1586 | 1342 | 1039 | 842 | 754 | 719 | 710 | 717 | 761 |
| 23° | 1961 | 1840 | 1588 | 1334 | 1029 | 828 | 741 | 707 | 700 | 706 | 748 |
| 24° | 1982 | 1870 | 1591 | 1325 | 1017 | 814 | 729 | 697 | 689 | 695 | 735 |
| 25° | 1992 | 1895 | 1594 | 1313 | 1007 | 801 | 717 | 687 | 679 | 683 | 723 |
| 26° | 1983 | 1911 | 1600 | 1300 | 995 | 787 | 705 | 678 | 669 | 673 | 711 |
| 27° | 1956 | 1918 | 1607 | 1285 | 983 | 773 | 694 | 669 | 661 | 664 | 700 |
| 28° | 1917 | 1912 | 1614 | 1269 | 970 | 760 | 683 | 659 | 651 | 654 | 688 |
| 29° | 1848 | 1892 | 1620 | 1252 | 958 | 747 | 672 | 648 | 642 | 644 | 677 |
| 30° | 1760 | 1856 | 1628 | 1235 | 945 | 733 | 661 | 639 | 634 | 635 | 666 |
| 32.5° | 1520 | 1703 | 1635 | 1187 | 910 | 701 | 634 | 615 | 614 | 613 | 640 |
| 35° | 1291 | 1492 | 1625 | 1136 | 872 | 669 | 608 | 593 | 594 | 592 | 613 |
| 37.5° | 1070 | 1275 | 1582 | 1089 | 832 | 637 | 583 | 573 | 575 | 571 | 587 |
| 40° | 907 | 1081 | 1512 | 1033 | 788 | 606 | 558 | 552 | 556 | 551 | 563 |
| 42.5° | 792 | 921 | 1389 | 980 | 740 | 575 | 532 | 530 | 533 | 529 | 537 |
| 45° | 687 | 795 | 1257 | 925 | 690 | 543 | 506 | 504 | 510 | 504 | 512 |
| 47.5° | 620 | 697 | 1114 | 874 | 638 | 512 | 480 | 480 | 490 | 479 | 485 |
| 50° | 559 | 613 | 990 | 816 | 585 | 480 | 450 | 454 | 469 | 454 | 457 |
| 52.5° | 507 | 548 | 863 | 756 | 533 | 447 | 421 | 430 | 446 | 430 | 427 |
| 55° | 460 | 490 | 742 | 693 | 482 | 414 | 390 | 403 | 425 | 406 | 397 |
| 57.5° | 417 | 439 | 653 | 628 | 433 | 381 | 360 | 381 | 406 | 384 | 366 |
| 60° | 376 | 392 | 563 | 563 | 386 | 346 | 329 | 354 | 380 | 356 | 335 |
| 62.5° | 337 | 349 | 485 | 496 | 341 | 311 | 300 | 327 | 358 | 331 | 305 |
| 65° | 297 | 306 | 415 | 432 | 298 | 273 | 268 | 299 | 332 | 303 | 274 |



TEST NUMBER: P231561

CATALOG NUMBER: S123-DR-1-35-X-0048-1-U-DD-3-W

CANDELA DISTRIBUTION (continued):

| | 0° | 22.5° | 45° | 67.5° | 90° | 112.5° | 135° | 157.5° | 180° | 202.5° | 225° |
|-------|-----|-------|-----|-------|-----|--------|------|--------|------|--------|------|
| 67.5° | 262 | 266 | 351 | 369 | 256 | 237 | 234 | 269 | 303 | 273 | 238 |
| 70° | 226 | 227 | 292 | 309 | 215 | 204 | 202 | 236 | 272 | 240 | 207 |
| 72.5° | 190 | 190 | 237 | 251 | 178 | 170 | 171 | 205 | 237 | 208 | 176 |
| 75° | 155 | 154 | 188 | 199 | 142 | 137 | 139 | 173 | 201 | 175 | 144 |
| 77.5° | 122 | 123 | 144 | 151 | 109 | 106 | 112 | 140 | 164 | 142 | 114 |
| 80° | 92 | 89 | 104 | 108 | 78 | 78 | 82 | 107 | 126 | 109 | 86 |
| 82.5° | 62 | 63 | 69 | 71 | 51 | 52 | 56 | 76 | 91 | 78 | 60 |
| 85° | 37 | 37 | 40 | 40 | 29 | 30 | 36 | 47 | 57 | 50 | 37 |
| 87.5° | 16 | 16 | 17 | 17 | 13 | 14 | 17 | 23 | 28 | 25 | 19 |
| 90° | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |



TEST NUMBER: P231561

CATALOG NUMBER: S123-DR-1-35-X-0048-1-U-DD-3-W

CANDELA DISTRIBUTION (continued):

| | 247.5° | 270° | 292.5° | 315° | 337.5° | 360° |
|-------|--------|------|--------|------|--------|------|
| 0° | 1158 | 1158 | 1158 | 1158 | 1158 | 1158 |
| 1° | 1142 | 1172 | 1173 | 1196 | 1202 | 1196 |
| 2° | 1129 | 1171 | 1189 | 1225 | 1241 | 1241 |
| 3° | 1115 | 1170 | 1202 | 1256 | 1282 | 1285 |
| 4° | 1100 | 1167 | 1217 | 1287 | 1323 | 1332 |
| 5° | 1086 | 1165 | 1229 | 1317 | 1365 | 1381 |
| 6° | 1072 | 1163 | 1244 | 1349 | 1409 | 1426 |
| 7° | 1059 | 1159 | 1258 | 1381 | 1451 | 1473 |
| 8° | 1045 | 1159 | 1271 | 1412 | 1492 | 1518 |
| 9° | 1035 | 1153 | 1289 | 1441 | 1530 | 1554 |
| 10° | 1017 | 1147 | 1297 | 1469 | 1563 | 1587 |
| 11° | 1002 | 1140 | 1307 | 1497 | 1592 | 1617 |
| 12° | 987 | 1134 | 1319 | 1520 | 1617 | 1645 |
| 13° | 974 | 1128 | 1327 | 1535 | 1638 | 1666 |
| 14° | 960 | 1121 | 1338 | 1549 | 1656 | 1685 |
| 15° | 945 | 1114 | 1346 | 1561 | 1672 | 1709 |
| 16° | 932 | 1109 | 1353 | 1571 | 1687 | 1728 |
| 17° | 919 | 1100 | 1360 | 1577 | 1705 | 1755 |
| 18° | 905 | 1090 | 1362 | 1582 | 1723 | 1787 |
| 19° | 888 | 1079 | 1363 | 1584 | 1746 | 1819 |
| 20° | 874 | 1069 | 1362 | 1587 | 1775 | 1861 |
| 21° | 861 | 1059 | 1358 | 1587 | 1806 | 1897 |
| 22° | 846 | 1050 | 1353 | 1592 | 1837 | 1932 |
| 23° | 832 | 1040 | 1348 | 1594 | 1865 | 1961 |
| 24° | 818 | 1029 | 1338 | 1596 | 1891 | 1982 |
| 25° | 805 | 1017 | 1329 | 1600 | 1913 | 1992 |
| 26° | 791 | 1006 | 1316 | 1604 | 1929 | 1983 |
| 27° | 777 | 994 | 1301 | 1611 | 1933 | 1956 |
| 28° | 763 | 982 | 1281 | 1618 | 1924 | 1917 |
| 29° | 750 | 969 | 1264 | 1625 | 1900 | 1848 |
| 30° | 737 | 957 | 1246 | 1632 | 1860 | 1760 |
| 32.5° | 706 | 922 | 1203 | 1643 | 1699 | 1520 |
| 35° | 673 | 884 | 1151 | 1628 | 1482 | 1291 |
| 37.5° | 642 | 842 | 1100 | 1585 | 1264 | 1070 |
| 40° | 612 | 797 | 1049 | 1507 | 1068 | 907 |
| 42.5° | 581 | 750 | 997 | 1388 | 910 | 792 |
| 45° | 551 | 700 | 942 | 1253 | 784 | 687 |
| 47.5° | 520 | 647 | 886 | 1112 | 685 | 620 |
| 50° | 486 | 594 | 828 | 977 | 608 | 559 |
| 52.5° | 453 | 543 | 767 | 853 | 543 | 507 |
| 55° | 424 | 492 | 703 | 743 | 486 | 460 |
| 57.5° | 390 | 443 | 638 | 646 | 436 | 417 |
| 60° | 353 | 394 | 571 | 560 | 390 | 376 |
| 62.5° | 318 | 349 | 504 | 482 | 346 | 337 |
| 65° | 285 | 306 | 439 | 413 | 306 | 297 |



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CATALOG NUMBER: S123-DR-1-35-X-0048-1-U-DD-3-W

CANDELA DISTRIBUTION (continued):

| | 247.5° | 270° | 292.5° | 315° | 337.5° | 360° |
|-------|--------|------|--------|------|--------|------|
| 67.5° | 247 | 263 | 376 | 349 | 267 | 262 |
| 70° | 209 | 221 | 316 | 292 | 225 | 226 |
| 72.5° | 178 | 182 | 259 | 236 | 192 | 190 |
| 75° | 144 | 147 | 204 | 188 | 156 | 155 |
| 77.5° | 112 | 113 | 156 | 145 | 123 | 122 |
| 80° | 83 | 82 | 112 | 105 | 89 | 92 |
| 82.5° | 56 | 55 | 74 | 71 | 64 | 62 |
| 85° | 34 | 32 | 43 | 42 | 38 | 37 |
| 87.5° | 17 | 16 | 20 | 20 | 18 | 16 |
| 90° | 0 | 0 | 0 | 0 | 0 | 0 |

(END OF REPORT)