

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: FAIL-SAFE

Report Number: P190080

Luminaire Tested: **TRB11-LD4-15W-50-OPL-BK-UNV-EDC1**

Issue Date: 3/3/2020



**Test Information**

Test Method: LM-79-08  
Report Number: P190080  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (P27856)  
Test Lab: INNOVATION CENTER(G2)  
Issue Date: 3/3/2020  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: FAIL-SAFE  
Catalog Number: TRB11-LD4-15W-50-OPL-BK-UNV-EDC1  
Description: TERRAPIN 11" LED WALL MOUNT WITH BORDER PAINTED OPAL LENS  
Light Source: (56) NICHIA 5000  
NF2L757DRT  
Ballast/Driver: OSRAM ELECTRONIC DRIVER PROGRAMMED AT 300mA  
OT25W/1

**Summary**

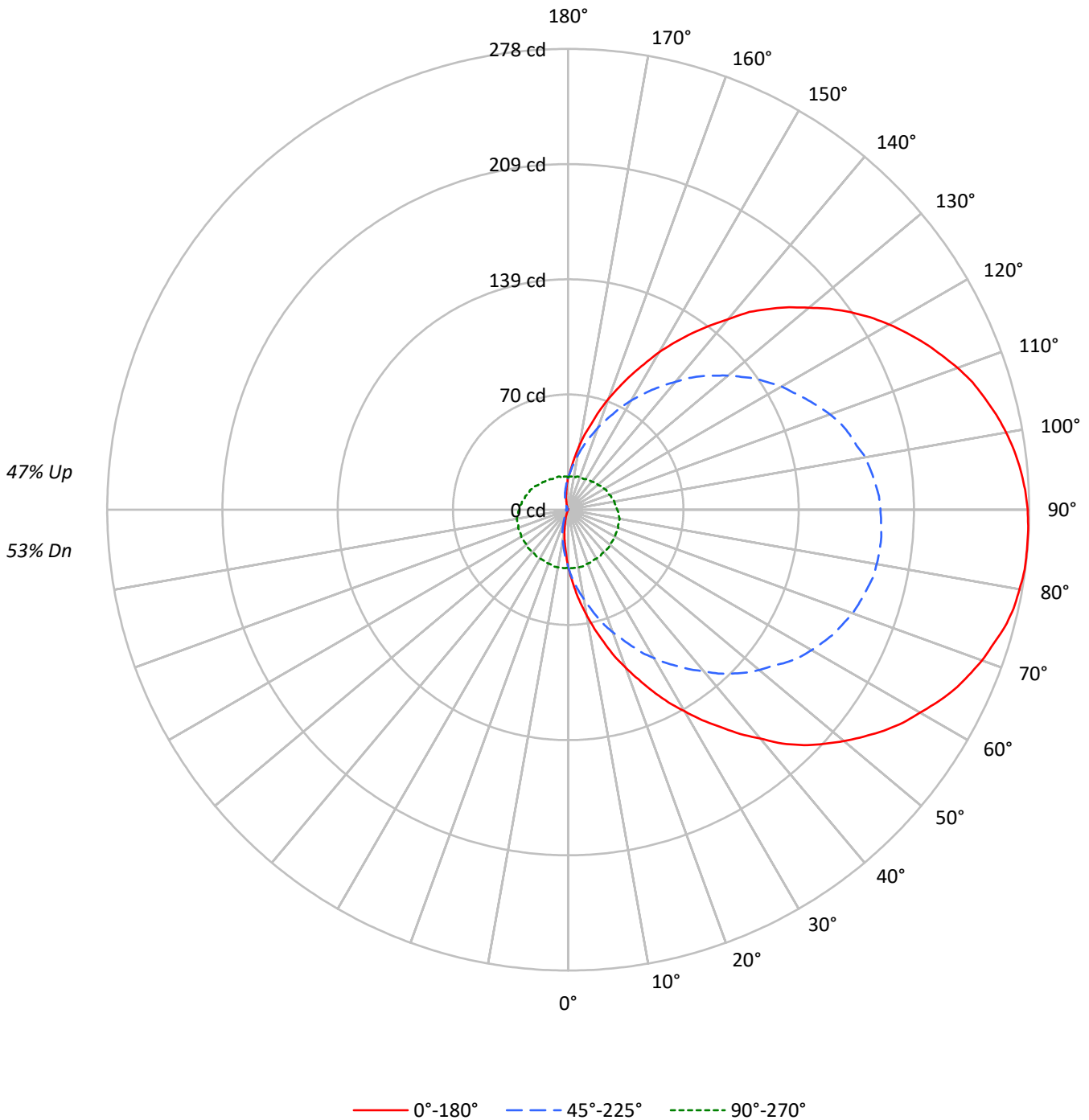
Lumens per Lamp: N/A  
Luminaire Lumens: 886.0 lumens  
Efficiency: N/A  
Efficacy: 61.5 lumens/watt  
Spacing Criteria (0/90/45): 3.26 / 1.49 / 2.7  
Luminous Opening: Rectangular w/ Sides (W: 0.92' x L: 0.29' x H: 0.92')  
CIE Type: General Diffuse

Input Watts (W): 14.4  
Input Voltage (V): NR  
Input Current (A<sub>in</sub>): 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: P190080

CATALOG NUMBER: TRB11-LD4-15W-50-OPL-BK-UNV-EDC1

### Luminous Intensity Polar Plot





TEST NUMBER: P190080

CATALOG NUMBER: TRB11-LD4-15W-50-OPL-BK-UNV-EDC1

**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   | 108 | 108 | 108 | 108 | 100 | 100 | 100 | 100 | 85 | 85 | 85 | 72 | 72 | 72 | 59 | 59 | 59 | 53 |
| 1   | 93  | 86  | 80  | 75  | 85  | 79  | 74  | 69  | 66 | 62 | 58 | 54 | 51 | 48 | 43 | 41 | 39 | 33 |
| 2   | 82  | 72  | 64  | 57  | 75  | 66  | 59  | 52  | 55 | 49 | 44 | 45 | 40 | 36 | 35 | 32 | 28 | 24 |
| 3   | 74  | 62  | 52  | 45  | 67  | 56  | 48  | 41  | 47 | 40 | 35 | 38 | 32 | 28 | 29 | 25 | 22 | 17 |
| 4   | 67  | 53  | 44  | 36  | 61  | 49  | 40  | 33  | 40 | 33 | 28 | 33 | 27 | 23 | 25 | 21 | 17 | 14 |
| 5   | 61  | 47  | 37  | 30  | 55  | 43  | 34  | 28  | 35 | 28 | 23 | 29 | 23 | 19 | 22 | 18 | 14 | 11 |
| 6   | 56  | 42  | 32  | 25  | 51  | 38  | 30  | 23  | 32 | 25 | 19 | 25 | 20 | 16 | 20 | 15 | 12 | 9  |
| 7   | 51  | 37  | 28  | 22  | 47  | 34  | 26  | 20  | 28 | 22 | 17 | 23 | 17 | 13 | 18 | 13 | 10 | 7  |
| 8   | 47  | 33  | 25  | 19  | 43  | 31  | 23  | 17  | 26 | 19 | 14 | 21 | 15 | 12 | 16 | 12 | 9  | 6  |
| 9   | 44  | 30  | 22  | 16  | 40  | 28  | 20  | 15  | 23 | 17 | 13 | 19 | 14 | 10 | 15 | 11 | 8  | 5  |
| 10  | 41  | 28  | 20  | 14  | 37  | 25  | 18  | 13  | 21 | 15 | 11 | 17 | 12 | 9  | 14 | 10 | 7  | 5  |

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

|     | 0°   | 90°  | 180° |
|-----|------|------|------|
| 0°  | 1393 | 1393 | 1393 |
| 5°  | 1537 | 1312 | 678  |
| 10° | 1707 | 1227 | 347  |
| 15° | 1867 | 1160 | 143  |
| 20° | 2026 | 1087 | 50   |
| 25° | 2178 | 1030 | 0    |
| 30° | 2319 | 1002 | 0    |
| 35° | 2455 | 983  | 0    |
| 40° | 2602 | 954  | 0    |
| 45° | 2761 | 951  | 0    |
| 50° | 2867 | 934  | 0    |
| 55° | 2972 | 945  | 8    |
| 60° | 3060 | 964  | 7    |
| 65° | 3162 | 972  | 7    |
| 70° | 3246 | 1008 | 7    |
| 75° | 3332 | 1035 | 7    |
| 80° | 3404 | 1095 | 7    |
| 85° | 3474 | 1122 | 8    |



TEST NUMBER: P190080

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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 3.4    | 0.4       |
| 10°-20°   | 11.4   | 1.3       |
| 20°-30°   | 22.3   | 2.5       |
| 30°-40°   | 36.4   | 4.1       |
| 40°-50°   | 53.1   | 6.0       |
| 50°-60°   | 69.5   | 7.8       |
| 60°-70°   | 83.6   | 9.4       |
| 70°-80°   | 93.7   | 10.6      |
| 80°-90°   | 97.8   | 11.0      |
| 90°-100°  | 95.8   | 10.8      |
| 100°-110° | 88.0   | 9.9       |
| 110°-120° | 75.4   | 8.5       |
| 120°-130° | 59.9   | 6.8       |
| 130°-140° | 43.2   | 4.9       |
| 140°-150° | 27.8   | 3.1       |
| 150°-160° | 15.5   | 1.8       |
| 160°-170° | 7.2    | 0.8       |
| 170°-180° | 2.0    | 0.2       |
| 0°-30°    | 37.1   | 4.2       |
| 0°-40°    | 73.6   | 8.3       |
| 0°-60°    | 196.2  | 22.1      |
| 0°-90°    | 471.3  | 53.2      |
| 90°-120°  | 259.2  | 29.3      |
| 90°-150°  | 390.0  | 44.0      |
| 90°-180°  | 415.0  | 46.8      |
| 0°-180°   | 886.0  | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°  | 45° | 90° | 135° | 180° | Flux |
|------|-----|-----|-----|------|------|------|
| 0°   | 35  | 35  | 35  | 35   | 35   |      |
| 5°   | 48  | 45  | 35  | 26   | 21   | 5    |
| 15°  | 82  | 67  | 35  | 13   | 6    | 24   |
| 25°  | 121 | 91  | 34  | 5    | 0    | 56   |
| 35°  | 160 | 115 | 34  | 1    | 0    | 101  |
| 45°  | 201 | 140 | 33  | 1    | 0    | 155  |
| 55°  | 232 | 161 | 33  | 1    | 1    | 208  |
| 65°  | 257 | 177 | 32  | 1    | 1    | 254  |
| 75°  | 273 | 186 | 32  | 1    | 1    | 288  |
| 85°  | 278 | 190 | 30  | 1    | 1    | 227  |
| 90°  | 277 | 188 | 30  | 1    | 1    | 152  |
| 95°  | 274 | 186 | 29  | 1    | 1    | 223  |
| 105° | 260 | 176 | 27  | 1    | 1    | 275  |
| 115° | 237 | 158 | 26  | 1    | 1    | 236  |
| 125° | 208 | 138 | 25  | 1    | 1    | 186  |
| 135° | 171 | 114 | 23  | 1    | 1    | 133  |
| 145° | 130 | 88  | 21  | 1    | 0    | 82   |
| 155° | 89  | 64  | 21  | 3    | 0    | 42   |
| 165° | 54  | 42  | 21  | 8    | 4    | 16   |
| 175° | 27  | 25  | 20  | 14   | 12   | 3    |
| 180° | 20  | 20  | 20  | 20   | 20   |      |



TEST NUMBER: P190080

CATALOG NUMBER: TRB11-LD4-15W-50-OPL-BK-UNV-EDC1

**CANDELA DISTRIBUTION (FULL):**

|        | 0°    | 5°    | 10°   | 15°   | 20°   | 22.5° | 25°   | 30°   | 35°   | 40°   | 45°   |
|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 0°     | 34.6  | 34.6  | 34.6  | 34.6  | 34.6  | 34.6  | 34.6  | 34.6  | 34.6  | 34.6  | 34.6  |
| 2.5°   | 40.9  | 40.3  | 40.3  | 40.3  | 40.3  | 40.3  | 39.7  | 40.3  | 39.7  | 39.7  | 39.7  |
| 5°     | 48.5  | 48.5  | 47.9  | 47.9  | 47.2  | 47.2  | 46.6  | 46.6  | 46.0  | 45.3  | 44.7  |
| 7.5°   | 56.7  | 56.0  | 56.0  | 55.4  | 54.8  | 54.2  | 53.5  | 52.9  | 51.6  | 51.0  | 49.7  |
| 10°    | 64.9  | 64.2  | 64.2  | 63.6  | 62.3  | 61.7  | 61.1  | 59.8  | 58.6  | 56.7  | 54.8  |
| 12.5°  | 73.7  | 73.0  | 72.4  | 71.8  | 71.2  | 69.9  | 68.6  | 67.4  | 64.9  | 63.0  | 60.4  |
| 15°    | 82.5  | 83.1  | 81.9  | 80.6  | 79.3  | 78.7  | 77.5  | 74.9  | 72.4  | 69.9  | 66.7  |
| 17.5°  | 92.6  | 91.9  | 91.3  | 90.0  | 88.2  | 87.5  | 85.6  | 83.1  | 80.0  | 76.8  | 73.0  |
| 20°    | 101.4 | 101.4 | 100.7 | 98.9  | 97.0  | 95.7  | 93.8  | 90.7  | 86.9  | 83.1  | 78.7  |
| 22.5°  | 110.8 | 110.8 | 109.6 | 108.3 | 105.8 | 103.9 | 102.0 | 98.2  | 94.5  | 90.0  | 84.4  |
| 25°    | 120.9 | 120.9 | 119.0 | 117.1 | 114.6 | 113.3 | 110.8 | 107.0 | 102.6 | 97.0  | 90.7  |
| 27.5°  | 131.0 | 131.0 | 129.1 | 127.2 | 124.0 | 122.2 | 119.6 | 115.2 | 110.2 | 103.9 | 97.6  |
| 30°    | 140.4 | 140.4 | 139.2 | 136.6 | 132.9 | 131.0 | 128.5 | 123.4 | 117.8 | 110.8 | 103.3 |
| 32.5°  | 150.5 | 149.9 | 148.0 | 145.5 | 141.7 | 139.8 | 136.6 | 131.0 | 124.7 | 117.8 | 109.6 |
| 35°    | 159.9 | 159.3 | 157.4 | 154.9 | 150.5 | 148.0 | 145.5 | 139.2 | 131.6 | 124.0 | 115.2 |
| 37.5°  | 170.6 | 170.6 | 168.8 | 165.6 | 159.3 | 156.8 | 153.6 | 147.3 | 139.2 | 131.0 | 121.5 |
| 40°    | 180.1 | 180.1 | 178.2 | 174.4 | 169.4 | 166.9 | 163.1 | 154.9 | 146.7 | 137.3 | 127.2 |
| 42.5°  | 191.4 | 190.8 | 188.9 | 185.1 | 179.5 | 176.9 | 173.2 | 165.6 | 154.9 | 144.8 | 134.1 |
| 45°    | 200.9 | 200.2 | 197.7 | 193.3 | 188.3 | 185.1 | 180.7 | 173.2 | 162.5 | 151.1 | 139.8 |
| 47.5°  | 209.1 | 208.4 | 205.9 | 202.1 | 195.8 | 192.7 | 188.3 | 180.1 | 170.0 | 157.4 | 145.5 |
| 50°    | 217.2 | 216.6 | 214.1 | 209.7 | 203.4 | 200.2 | 195.8 | 187.0 | 176.3 | 164.3 | 150.5 |
| 52.5°  | 224.8 | 224.2 | 221.6 | 216.6 | 210.3 | 207.2 | 202.8 | 193.3 | 182.0 | 170.0 | 154.9 |
| 55°    | 232.4 | 231.7 | 229.2 | 223.5 | 217.2 | 214.1 | 209.1 | 199.6 | 188.3 | 175.1 | 160.6 |
| 57.5°  | 239.3 | 238.0 | 234.9 | 230.5 | 223.5 | 219.8 | 215.4 | 205.3 | 193.3 | 180.1 | 165.6 |
| 60°    | 244.9 | 244.3 | 241.8 | 236.8 | 229.2 | 225.4 | 220.4 | 210.3 | 198.3 | 184.5 | 169.4 |
| 62.5°  | 251.2 | 250.0 | 247.5 | 241.8 | 234.9 | 230.5 | 226.1 | 215.4 | 202.8 | 188.3 | 173.2 |
| 65°    | 256.9 | 255.7 | 252.5 | 247.5 | 239.9 | 235.5 | 230.5 | 219.8 | 207.2 | 192.7 | 176.9 |
| 67.5°  | 261.3 | 260.1 | 256.9 | 251.2 | 244.3 | 239.9 | 234.9 | 223.5 | 210.3 | 195.8 | 179.5 |
| 70°    | 265.7 | 264.5 | 261.3 | 255.7 | 248.1 | 243.7 | 238.6 | 227.3 | 214.1 | 199.0 | 182.6 |
| 72.5°  | 268.9 | 268.2 | 265.1 | 259.4 | 251.2 | 246.8 | 241.8 | 229.8 | 216.6 | 201.5 | 184.5 |
| 75°    | 272.7 | 271.4 | 268.2 | 262.6 | 254.4 | 250.0 | 244.9 | 233.0 | 219.1 | 203.4 | 186.4 |
| 77.5°  | 275.2 | 273.3 | 270.1 | 264.5 | 256.9 | 251.9 | 246.8 | 234.9 | 221.0 | 205.3 | 188.3 |
| 80°    | 276.4 | 275.2 | 272.0 | 266.4 | 258.8 | 253.8 | 248.1 | 236.1 | 222.3 | 206.5 | 188.9 |
| 82.5°  | 277.7 | 276.4 | 272.7 | 267.0 | 259.4 | 254.4 | 249.4 | 236.8 | 222.9 | 207.2 | 189.5 |
| 85°    | 277.7 | 276.4 | 273.3 | 267.6 | 259.4 | 255.0 | 249.4 | 237.4 | 223.5 | 207.2 | 189.5 |
| 87.5°  | 277.7 | 276.4 | 273.3 | 267.0 | 259.4 | 254.4 | 249.4 | 236.8 | 222.9 | 206.5 | 188.9 |
| 90°    | 277.1 | 275.8 | 272.7 | 266.4 | 258.8 | 253.8 | 248.7 | 236.1 | 222.3 | 205.9 | 188.3 |
| 92.5°  | 275.8 | 274.5 | 271.4 | 265.1 | 257.5 | 252.5 | 246.8 | 234.9 | 221.0 | 204.6 | 187.6 |
| 95°    | 273.9 | 272.7 | 269.5 | 263.2 | 255.7 | 250.6 | 245.6 | 233.6 | 219.8 | 203.4 | 185.8 |
| 97.5°  | 271.4 | 270.1 | 267.0 | 261.3 | 253.1 | 248.1 | 243.1 | 231.1 | 217.2 | 201.5 | 183.9 |
| 100°   | 268.2 | 267.0 | 263.8 | 258.2 | 250.0 | 245.6 | 239.9 | 228.6 | 214.7 | 198.3 | 182.0 |
| 102.5° | 264.5 | 263.2 | 259.4 | 253.8 | 246.2 | 241.8 | 236.1 | 224.8 | 210.9 | 195.2 | 178.2 |
| 105°   | 260.1 | 259.4 | 255.7 | 250.0 | 242.4 | 238.0 | 233.0 | 221.0 | 207.8 | 192.7 | 175.7 |
| 107.5° | 255.7 | 254.4 | 250.6 | 245.6 | 238.0 | 233.6 | 228.6 | 217.2 | 204.0 | 188.9 | 172.5 |
| 110°   | 250.0 | 249.4 | 245.6 | 239.9 | 233.0 | 228.6 | 223.5 | 212.2 | 199.6 | 184.5 | 168.1 |



TEST NUMBER: P190080

CATALOG NUMBER: TRB11-LD4-15W-50-OPL-BK-UNV-EDC1

**CANDELA DISTRIBUTION (continued):**

|        | 0°    | 5°    | 10°   | 15°   | 20°   | 22.5° | 25°   | 30°   | 35°   | 40°   | 45°   |
|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 112.5° | 243.7 | 243.1 | 239.9 | 234.2 | 227.3 | 222.9 | 217.9 | 207.2 | 194.6 | 179.5 | 163.1 |
| 115°   | 237.4 | 236.1 | 233.0 | 227.9 | 221.0 | 217.2 | 212.2 | 201.5 | 188.9 | 175.1 | 158.1 |
| 117.5° | 230.5 | 229.8 | 226.7 | 221.6 | 214.7 | 210.3 | 205.9 | 195.8 | 183.2 | 169.4 | 153.0 |
| 120°   | 223.5 | 222.3 | 219.1 | 214.7 | 207.8 | 204.0 | 199.6 | 189.5 | 177.6 | 163.1 | 148.6 |
| 122.5° | 216.0 | 214.7 | 212.2 | 207.2 | 200.9 | 197.1 | 192.7 | 182.6 | 171.3 | 156.8 | 142.9 |
| 125°   | 207.8 | 206.5 | 204.0 | 199.0 | 193.3 | 189.5 | 185.1 | 175.7 | 164.3 | 150.5 | 137.9 |
| 127.5° | 199.0 | 198.3 | 195.2 | 190.8 | 185.1 | 181.3 | 177.6 | 168.1 | 156.2 | 144.2 | 131.6 |
| 130°   | 189.5 | 188.9 | 186.4 | 182.0 | 176.3 | 173.2 | 169.4 | 159.9 | 149.2 | 137.9 | 125.9 |
| 132.5° | 180.7 | 180.1 | 177.6 | 173.8 | 168.1 | 165.0 | 160.6 | 151.8 | 141.7 | 131.0 | 119.6 |
| 135°   | 171.3 | 171.3 | 168.1 | 165.0 | 158.1 | 154.9 | 151.1 | 143.6 | 134.8 | 124.7 | 114.0 |
| 137.5° | 161.8 | 159.9 | 158.1 | 153.6 | 148.6 | 146.1 | 142.9 | 135.4 | 127.2 | 117.8 | 107.7 |
| 140°   | 149.9 | 149.2 | 147.3 | 144.2 | 139.2 | 136.6 | 133.5 | 126.6 | 119.0 | 110.2 | 100.7 |
| 142.5° | 139.8 | 139.2 | 137.3 | 134.1 | 129.7 | 127.2 | 124.7 | 117.8 | 110.8 | 102.6 | 94.5  |
| 145°   | 129.7 | 129.1 | 127.8 | 124.7 | 120.3 | 118.4 | 115.9 | 109.6 | 103.3 | 95.7  | 88.2  |
| 147.5° | 119.6 | 119.0 | 117.8 | 115.2 | 111.5 | 108.9 | 107.0 | 101.4 | 95.7  | 88.8  | 81.9  |
| 150°   | 109.6 | 109.6 | 108.3 | 105.8 | 102.0 | 100.1 | 97.6  | 93.2  | 88.2  | 82.5  | 76.2  |
| 152.5° | 98.9  | 98.9  | 97.6  | 95.7  | 92.6  | 91.3  | 88.8  | 85.0  | 80.0  | 74.9  | 69.9  |
| 155°   | 89.4  | 89.4  | 88.2  | 86.3  | 83.7  | 82.5  | 80.6  | 76.8  | 73.0  | 68.6  | 63.6  |
| 157.5° | 80.0  | 80.0  | 79.3  | 77.5  | 75.6  | 74.3  | 72.4  | 69.3  | 66.1  | 62.3  | 57.9  |
| 160°   | 71.2  | 71.2  | 70.5  | 68.6  | 67.4  | 66.1  | 64.2  | 61.7  | 59.2  | 56.0  | 52.9  |
| 162.5° | 62.3  | 62.3  | 61.7  | 60.4  | 59.2  | 57.9  | 56.7  | 54.8  | 52.9  | 49.7  | 47.2  |
| 165°   | 53.5  | 54.2  | 53.5  | 52.9  | 51.6  | 51.0  | 49.7  | 48.5  | 46.6  | 44.7  | 42.2  |
| 167.5° | 46.6  | 46.6  | 46.6  | 45.3  | 44.7  | 44.1  | 43.4  | 42.2  | 40.9  | 39.0  | 37.8  |
| 170°   | 39.7  | 39.7  | 39.7  | 39.0  | 38.4  | 37.8  | 37.2  | 36.5  | 35.3  | 34.6  | 33.4  |
| 172.5° | 32.7  | 33.4  | 33.4  | 32.7  | 32.1  | 32.1  | 31.5  | 30.9  | 30.9  | 29.6  | 29.0  |
| 175°   | 27.1  | 27.1  | 27.1  | 27.1  | 27.1  | 26.4  | 26.4  | 26.4  | 26.4  | 25.8  | 25.2  |
| 177.5° | 22.0  | 22.7  | 22.7  | 22.7  | 22.0  | 22.0  | 22.7  | 22.0  | 22.0  | 22.0  | 22.0  |
| 180°   | 19.5  | 19.5  | 19.5  | 19.5  | 19.5  | 19.5  | 19.5  | 19.5  | 19.5  | 19.5  | 19.5  |



TEST NUMBER: P190080

CATALOG NUMBER: TRB11-LD4-15W-50-OPL-BK-UNV-EDC1

**CANDELA DISTRIBUTION (continued):**

|        | 50°   | 55°   | 60°   | 65°   | 67.5° | 70°  | 75°  | 80°  | 85°  | 90°  | 95°  |
|--------|-------|-------|-------|-------|-------|------|------|------|------|------|------|
| 0°     | 34.6  | 34.6  | 34.6  | 34.6  | 34.6  | 34.6 | 34.6 | 34.6 | 34.6 | 34.6 | 34.6 |
| 2.5°   | 39.0  | 38.4  | 38.4  | 37.8  | 37.8  | 37.2 | 37.2 | 36.5 | 35.9 | 35.3 | 34.6 |
| 5°     | 43.4  | 42.8  | 42.2  | 40.9  | 40.3  | 39.7 | 38.4 | 37.8 | 36.5 | 35.3 | 34.0 |
| 7.5°   | 48.5  | 46.6  | 45.3  | 44.1  | 42.8  | 42.2 | 40.3 | 38.4 | 37.2 | 35.3 | 33.4 |
| 10°    | 52.9  | 51.0  | 49.1  | 46.6  | 45.3  | 44.7 | 42.2 | 39.7 | 37.8 | 35.3 | 32.7 |
| 12.5°  | 57.9  | 55.4  | 52.9  | 49.7  | 48.5  | 46.6 | 44.1 | 40.9 | 37.8 | 35.3 | 32.1 |
| 15°    | 63.6  | 59.8  | 56.7  | 52.9  | 51.0  | 49.1 | 45.3 | 42.2 | 38.4 | 35.3 | 31.5 |
| 17.5°  | 69.3  | 64.9  | 60.4  | 56.0  | 54.2  | 51.6 | 47.2 | 42.8 | 39.0 | 34.6 | 31.5 |
| 20°    | 74.3  | 69.3  | 64.2  | 59.2  | 56.7  | 54.2 | 49.1 | 44.1 | 39.0 | 34.6 | 30.2 |
| 22.5°  | 79.3  | 73.7  | 68.0  | 61.7  | 59.2  | 56.0 | 50.4 | 44.7 | 39.7 | 34.6 | 29.6 |
| 25°    | 85.0  | 78.1  | 71.8  | 64.9  | 61.7  | 58.6 | 52.3 | 46.0 | 39.7 | 34.0 | 29.0 |
| 27.5°  | 90.7  | 83.1  | 75.6  | 68.0  | 64.9  | 61.1 | 53.5 | 46.6 | 40.3 | 34.0 | 28.3 |
| 30°    | 95.7  | 87.5  | 80.0  | 71.2  | 67.4  | 63.6 | 55.4 | 47.9 | 40.9 | 34.0 | 28.3 |
| 32.5°  | 101.4 | 91.9  | 83.1  | 74.3  | 69.9  | 65.5 | 56.7 | 48.5 | 40.9 | 34.0 | 27.7 |
| 35°    | 106.4 | 97.0  | 86.9  | 76.8  | 72.4  | 67.4 | 57.9 | 49.7 | 40.9 | 34.0 | 27.1 |
| 37.5°  | 111.5 | 101.4 | 90.7  | 80.0  | 74.9  | 69.9 | 59.8 | 50.4 | 41.6 | 33.4 | 26.4 |
| 40°    | 116.5 | 105.8 | 93.8  | 83.1  | 77.5  | 71.8 | 61.1 | 51.0 | 41.6 | 33.4 | 26.4 |
| 42.5°  | 122.8 | 110.2 | 98.2  | 86.3  | 80.0  | 74.3 | 63.0 | 51.6 | 42.2 | 33.4 | 25.8 |
| 45°    | 127.8 | 114.6 | 102.0 | 88.8  | 82.5  | 76.2 | 64.2 | 52.9 | 42.2 | 33.4 | 25.2 |
| 47.5°  | 132.2 | 118.4 | 105.2 | 91.3  | 84.4  | 78.1 | 65.5 | 53.5 | 42.8 | 33.4 | 24.6 |
| 50°    | 136.6 | 122.2 | 108.3 | 93.8  | 86.9  | 80.0 | 66.7 | 54.2 | 42.8 | 32.7 | 24.6 |
| 52.5°  | 141.0 | 125.9 | 111.5 | 96.3  | 88.8  | 81.9 | 68.0 | 54.8 | 43.4 | 32.7 | 23.9 |
| 55°    | 145.5 | 129.7 | 114.0 | 98.2  | 90.7  | 83.1 | 68.6 | 55.4 | 43.4 | 32.7 | 23.9 |
| 57.5°  | 148.6 | 132.9 | 116.5 | 100.1 | 91.9  | 84.4 | 69.9 | 56.0 | 43.4 | 32.7 | 23.3 |
| 60°    | 152.4 | 135.4 | 119.0 | 102.0 | 93.8  | 85.6 | 70.5 | 56.0 | 43.4 | 32.7 | 23.3 |
| 62.5°  | 155.5 | 138.5 | 120.9 | 103.9 | 95.1  | 86.9 | 71.2 | 56.7 | 43.4 | 32.1 | 22.7 |
| 65°    | 158.7 | 141.0 | 122.8 | 105.2 | 96.3  | 88.2 | 71.8 | 56.7 | 43.4 | 32.1 | 22.7 |
| 67.5°  | 161.8 | 142.9 | 124.7 | 106.4 | 97.6  | 88.8 | 72.4 | 57.3 | 43.4 | 32.1 | 22.7 |
| 70°    | 163.7 | 144.8 | 126.6 | 107.7 | 98.9  | 90.0 | 73.0 | 57.3 | 43.4 | 32.1 | 22.0 |
| 72.5°  | 166.9 | 146.7 | 127.8 | 108.9 | 99.5  | 90.7 | 73.0 | 57.3 | 43.4 | 31.5 | 22.0 |
| 75°    | 168.8 | 148.0 | 128.5 | 109.6 | 100.1 | 90.7 | 73.7 | 57.3 | 43.4 | 31.5 | 21.4 |
| 77.5°  | 170.0 | 148.6 | 129.7 | 110.2 | 100.1 | 91.3 | 73.7 | 57.3 | 43.4 | 31.5 | 21.4 |
| 80°    | 170.6 | 149.2 | 129.7 | 110.2 | 100.7 | 91.3 | 73.7 | 57.3 | 42.8 | 31.5 | 21.4 |
| 82.5°  | 170.6 | 149.9 | 129.7 | 110.2 | 100.1 | 91.3 | 73.0 | 56.7 | 42.8 | 30.9 | 20.8 |
| 85°    | 170.6 | 149.2 | 129.7 | 109.6 | 100.1 | 90.7 | 73.0 | 56.7 | 42.2 | 30.2 | 20.8 |
| 87.5°  | 170.6 | 149.2 | 129.1 | 109.6 | 99.5  | 90.0 | 72.4 | 56.0 | 41.6 | 30.2 | 20.1 |
| 90°    | 170.0 | 148.6 | 128.5 | 108.9 | 98.9  | 89.4 | 71.8 | 55.4 | 41.6 | 29.6 | 19.5 |
| 92.5°  | 168.8 | 147.3 | 127.8 | 107.7 | 98.2  | 88.8 | 71.2 | 54.8 | 40.9 | 29.0 | 19.5 |
| 95°    | 167.5 | 146.1 | 126.6 | 107.0 | 97.0  | 88.2 | 70.5 | 54.2 | 40.3 | 29.0 | 19.5 |
| 97.5°  | 165.6 | 144.2 | 124.7 | 105.8 | 95.7  | 86.9 | 69.3 | 53.5 | 39.7 | 28.3 | 18.9 |
| 100°   | 162.5 | 142.3 | 123.4 | 103.9 | 94.5  | 85.6 | 68.6 | 52.9 | 39.7 | 28.3 | 18.9 |
| 102.5° | 159.9 | 139.8 | 120.9 | 102.6 | 93.2  | 84.4 | 67.4 | 52.3 | 39.0 | 27.7 | 18.9 |
| 105°   | 156.2 | 137.9 | 119.0 | 100.7 | 91.3  | 82.5 | 66.1 | 51.0 | 38.4 | 27.1 | 18.3 |
| 107.5° | 153.6 | 134.8 | 116.5 | 98.2  | 89.4  | 81.2 | 64.9 | 50.4 | 37.8 | 27.1 | 18.3 |
| 110°   | 149.9 | 131.6 | 114.0 | 96.3  | 87.5  | 79.3 | 63.6 | 49.1 | 37.2 | 26.4 | 18.3 |





TEST NUMBER: P190080

CATALOG NUMBER: TRB11-LD4-15W-50-OPL-BK-UNV-EDC1

**CANDELA DISTRIBUTION (continued):**

|        | 50°   | 55°   | 60°   | 65°  | 67.5° | 70°  | 75°  | 80°  | 85°  | 90°  | 95°  |
|--------|-------|-------|-------|------|-------|------|------|------|------|------|------|
| 112.5° | 146.1 | 128.5 | 110.8 | 93.8 | 85.6  | 77.5 | 62.3 | 47.9 | 35.9 | 25.8 | 17.6 |
| 115°   | 141.7 | 124.7 | 108.3 | 91.3 | 83.1  | 75.6 | 60.4 | 47.2 | 35.3 | 25.8 | 17.6 |
| 117.5° | 137.3 | 121.5 | 105.2 | 88.8 | 80.6  | 73.7 | 59.2 | 46.0 | 35.3 | 25.8 | 17.6 |
| 120°   | 132.9 | 117.1 | 101.4 | 86.3 | 78.7  | 71.2 | 57.3 | 44.7 | 34.0 | 25.2 | 17.6 |
| 122.5° | 128.5 | 113.3 | 98.2  | 83.1 | 76.2  | 69.3 | 56.0 | 44.1 | 33.4 | 24.6 | 17.6 |
| 125°   | 123.4 | 108.9 | 94.5  | 80.6 | 73.7  | 66.7 | 54.2 | 42.8 | 32.7 | 24.6 | 17.0 |
| 127.5° | 118.4 | 104.5 | 90.7  | 77.5 | 70.5  | 64.2 | 52.3 | 41.6 | 32.1 | 23.9 | 17.0 |
| 130°   | 112.7 | 100.1 | 86.9  | 74.3 | 68.0  | 61.7 | 50.4 | 40.3 | 31.5 | 23.3 | 17.0 |
| 132.5° | 107.7 | 95.7  | 83.1  | 71.2 | 64.9  | 59.2 | 48.5 | 39.0 | 30.2 | 23.3 | 17.0 |
| 135°   | 102.6 | 90.7  | 79.3  | 68.0 | 62.3  | 57.3 | 47.2 | 37.8 | 29.6 | 22.7 | 17.0 |
| 137.5° | 97.0  | 86.3  | 74.9  | 64.9 | 59.2  | 54.8 | 45.3 | 36.5 | 29.0 | 22.7 | 17.0 |
| 140°   | 91.3  | 81.2  | 71.2  | 61.7 | 56.7  | 52.3 | 43.4 | 35.3 | 28.3 | 22.0 | 17.0 |
| 142.5° | 85.6  | 76.2  | 67.4  | 57.9 | 53.5  | 49.7 | 41.6 | 34.0 | 27.7 | 22.0 | 17.0 |
| 145°   | 80.0  | 71.8  | 63.0  | 54.8 | 51.0  | 47.2 | 39.7 | 32.7 | 27.1 | 21.4 | 17.0 |
| 147.5° | 74.3  | 67.4  | 59.2  | 51.6 | 48.5  | 44.7 | 37.8 | 32.1 | 26.4 | 21.4 | 17.0 |
| 150°   | 69.3  | 63.0  | 55.4  | 49.1 | 46.0  | 42.2 | 36.5 | 30.9 | 25.8 | 21.4 | 17.0 |
| 152.5° | 63.6  | 57.9  | 51.6  | 46.0 | 42.8  | 40.3 | 34.6 | 29.6 | 25.2 | 20.8 | 17.0 |
| 155°   | 58.6  | 53.5  | 47.9  | 42.8 | 40.3  | 37.8 | 33.4 | 29.0 | 24.6 | 20.8 | 17.6 |
| 157.5° | 53.5  | 49.1  | 44.7  | 40.3 | 37.8  | 35.9 | 31.5 | 27.7 | 23.9 | 20.8 | 17.6 |
| 160°   | 49.1  | 45.3  | 41.6  | 37.8 | 35.3  | 34.0 | 30.2 | 26.4 | 23.3 | 20.8 | 17.6 |
| 162.5° | 44.1  | 40.9  | 37.8  | 34.6 | 33.4  | 31.5 | 29.0 | 25.8 | 23.3 | 20.8 | 18.3 |
| 165°   | 39.7  | 37.2  | 34.6  | 32.1 | 30.9  | 29.6 | 27.1 | 24.6 | 22.7 | 20.8 | 18.3 |
| 167.5° | 35.9  | 34.0  | 32.1  | 30.2 | 29.0  | 27.7 | 25.8 | 23.9 | 22.0 | 20.1 | 18.9 |
| 170°   | 32.1  | 30.9  | 29.0  | 27.7 | 27.1  | 26.4 | 24.6 | 23.3 | 22.0 | 20.8 | 18.9 |
| 172.5° | 28.3  | 27.7  | 26.4  | 25.2 | 25.2  | 24.6 | 23.3 | 22.0 | 21.4 | 20.1 | 19.5 |
| 175°   | 25.2  | 24.6  | 23.9  | 23.3 | 23.3  | 22.7 | 22.0 | 21.4 | 20.8 | 20.1 | 19.5 |
| 177.5° | 22.0  | 22.0  | 21.4  | 21.4 | 21.4  | 21.4 | 21.4 | 20.8 | 20.8 | 20.1 | 20.1 |
| 180°   | 19.5  | 19.5  | 19.5  | 19.5 | 19.5  | 19.5 | 19.5 | 19.5 | 19.5 | 19.5 | 19.5 |



TEST NUMBER: P190080

CATALOG NUMBER: TRB11-LD4-15W-50-OPL-BK-UNV-EDC1

**CANDELA DISTRIBUTION (continued):**

|        | 100° | 105° | 110° | 112.5° | 115° | 120° | 125° | 130° | 135° | 140° | 145° |
|--------|------|------|------|--------|------|------|------|------|------|------|------|
| 0°     | 34.6 | 34.6 | 34.6 | 34.6   | 34.6 | 34.6 | 34.6 | 34.6 | 34.6 | 34.6 | 34.6 |
| 2.5°   | 34.0 | 33.4 | 32.7 | 32.7   | 32.1 | 31.5 | 30.9 | 30.2 | 29.6 | 29.0 | 28.3 |
| 5°     | 32.7 | 31.5 | 30.9 | 30.2   | 29.6 | 28.3 | 27.7 | 26.4 | 25.8 | 24.6 | 23.9 |
| 7.5°   | 32.1 | 30.2 | 29.0 | 27.7   | 27.1 | 25.8 | 24.6 | 23.3 | 22.0 | 21.4 | 20.1 |
| 10°    | 30.9 | 29.0 | 27.1 | 25.8   | 25.2 | 23.3 | 21.4 | 20.1 | 18.9 | 17.6 | 16.4 |
| 12.5°  | 29.6 | 27.1 | 24.6 | 23.9   | 22.7 | 20.8 | 18.9 | 17.0 | 15.7 | 14.5 | 13.2 |
| 15°    | 28.3 | 25.8 | 23.3 | 22.0   | 20.8 | 18.3 | 16.4 | 14.5 | 13.2 | 11.3 | 10.1 |
| 17.5°  | 27.7 | 24.6 | 21.4 | 20.1   | 18.9 | 16.4 | 14.5 | 12.6 | 10.7 | 9.4  | 8.2  |
| 20°    | 26.4 | 22.7 | 19.5 | 18.3   | 17.0 | 14.5 | 12.0 | 10.1 | 8.2  | 6.9  | 5.7  |
| 22.5°  | 25.2 | 21.4 | 18.3 | 16.4   | 15.1 | 12.6 | 10.1 | 8.2  | 6.3  | 5.0  | 3.8  |
| 25°    | 24.6 | 20.1 | 17.0 | 15.1   | 13.9 | 10.7 | 8.8  | 6.3  | 5.0  | 3.8  | 2.5  |
| 27.5°  | 23.9 | 19.5 | 15.7 | 13.9   | 12.0 | 9.4  | 6.9  | 5.0  | 3.8  | 2.5  | 1.3  |
| 30°    | 22.7 | 18.3 | 14.5 | 12.6   | 10.7 | 8.2  | 5.7  | 3.8  | 2.5  | 1.3  | 0.6  |
| 32.5°  | 22.0 | 17.0 | 13.2 | 11.3   | 10.1 | 6.9  | 4.4  | 3.1  | 1.9  | 0.6  | 0.6  |
| 35°    | 21.4 | 16.4 | 12.0 | 10.7   | 8.8  | 5.7  | 3.8  | 1.9  | 1.3  | 0.6  | 0.6  |
| 37.5°  | 20.8 | 15.7 | 11.3 | 9.4    | 7.6  | 5.0  | 3.1  | 1.3  | 0.6  | 0.6  | 0.6  |
| 40°    | 20.1 | 14.5 | 10.7 | 8.8    | 6.9  | 4.4  | 2.5  | 1.3  | 0.6  | 0.6  | 0.6  |
| 42.5°  | 18.9 | 13.9 | 9.4  | 7.6    | 5.7  | 3.1  | 1.3  | 0.6  | 0.6  | 0.6  | 0.6  |
| 45°    | 18.9 | 13.2 | 8.8  | 6.9    | 5.0  | 2.5  | 1.3  | 0.6  | 0.6  | 0.6  | 0.6  |
| 47.5°  | 18.3 | 12.6 | 8.2  | 6.3    | 4.4  | 1.9  | 0.6  | 0.6  | 0.6  | 0.6  | 0.6  |
| 50°    | 17.6 | 12.0 | 7.6  | 5.7    | 3.8  | 1.9  | 0.6  | 0.6  | 0.6  | 0.6  | 0.6  |
| 52.5°  | 17.0 | 11.3 | 6.9  | 5.0    | 3.8  | 1.3  | 0.6  | 0.6  | 0.6  | 0.6  | 0.6  |
| 55°    | 17.0 | 10.7 | 6.3  | 4.4    | 3.1  | 1.3  | 0.6  | 0.6  | 0.6  | 0.6  | 0.6  |
| 57.5°  | 16.4 | 10.7 | 5.7  | 4.4    | 3.1  | 1.3  | 0.6  | 0.6  | 0.6  | 0.6  | 0.6  |
| 60°    | 15.7 | 10.1 | 5.7  | 3.8    | 2.5  | 1.3  | 1.3  | 1.3  | 0.6  | 0.6  | 0.6  |
| 62.5°  | 15.7 | 10.1 | 5.0  | 3.8    | 2.5  | 1.3  | 1.3  | 1.3  | 0.6  | 0.6  | 0.6  |
| 65°    | 15.1 | 9.4  | 5.0  | 3.1    | 1.9  | 1.3  | 1.3  | 1.3  | 1.3  | 0.6  | 0.6  |
| 67.5°  | 15.1 | 8.8  | 4.4  | 3.1    | 1.9  | 1.3  | 1.3  | 1.3  | 1.3  | 1.3  | 0.6  |
| 70°    | 14.5 | 8.8  | 4.4  | 3.1    | 1.9  | 1.3  | 1.3  | 1.3  | 1.3  | 1.3  | 1.3  |
| 72.5°  | 14.5 | 8.8  | 4.4  | 2.5    | 1.9  | 1.3  | 1.3  | 1.3  | 1.3  | 1.3  | 1.3  |
| 75°    | 14.5 | 8.2  | 4.4  | 2.5    | 1.9  | 1.3  | 1.3  | 1.3  | 1.3  | 1.3  | 1.3  |
| 77.5°  | 13.9 | 8.2  | 3.8  | 2.5    | 1.9  | 1.3  | 1.3  | 1.3  | 1.3  | 1.3  | 1.3  |
| 80°    | 13.9 | 8.2  | 3.8  | 2.5    | 1.3  | 1.3  | 1.3  | 1.3  | 1.3  | 1.3  | 1.3  |
| 82.5°  | 13.2 | 7.6  | 3.8  | 2.5    | 1.3  | 1.3  | 1.3  | 1.3  | 1.3  | 1.3  | 1.3  |
| 85°    | 13.2 | 7.6  | 3.1  | 1.9    | 1.3  | 1.3  | 1.3  | 1.3  | 1.3  | 1.3  | 1.3  |
| 87.5°  | 12.6 | 7.6  | 3.1  | 1.9    | 1.3  | 1.3  | 1.3  | 1.3  | 1.3  | 1.3  | 1.3  |
| 90°    | 12.6 | 6.9  | 3.1  | 1.9    | 1.3  | 1.3  | 1.3  | 1.3  | 1.3  | 0.6  | 0.6  |
| 92.5°  | 12.6 | 6.9  | 3.1  | 1.9    | 1.3  | 1.3  | 1.3  | 1.3  | 1.3  | 1.3  | 0.6  |
| 95°    | 12.0 | 6.9  | 3.1  | 1.9    | 1.3  | 1.3  | 1.3  | 1.3  | 1.3  | 1.3  | 0.6  |
| 97.5°  | 12.0 | 6.9  | 3.1  | 1.9    | 1.3  | 1.3  | 1.3  | 1.3  | 1.3  | 0.6  | 0.6  |
| 100°   | 12.0 | 6.9  | 3.1  | 1.9    | 1.3  | 1.3  | 1.3  | 1.3  | 1.3  | 0.6  | 0.6  |
| 102.5° | 12.0 | 6.9  | 3.1  | 1.9    | 1.3  | 1.3  | 1.3  | 0.6  | 0.6  | 0.6  | 0.6  |
| 105°   | 12.0 | 6.9  | 3.1  | 1.9    | 1.3  | 1.3  | 1.3  | 0.6  | 0.6  | 0.6  | 0.6  |
| 107.5° | 11.3 | 6.9  | 3.1  | 1.9    | 1.3  | 1.3  | 0.6  | 0.6  | 0.6  | 0.6  | 0.6  |
| 110°   | 11.3 | 6.9  | 3.1  | 2.5    | 1.3  | 1.3  | 1.3  | 0.6  | 0.6  | 0.6  | 0.6  |



TEST NUMBER: P190080

CATALOG NUMBER: TRB11-LD4-15W-50-OPL-BK-UNV-EDC1

**CANDELA DISTRIBUTION (continued):**

|        | 100° | 105° | 110° | 112.5° | 115° | 120° | 125° | 130° | 135° | 140° | 145° |
|--------|------|------|------|--------|------|------|------|------|------|------|------|
| 112.5° | 11.3 | 6.9  | 3.8  | 2.5    | 1.3  | 0.6  | 0.6  | 0.6  | 0.6  | 0.6  | 0.6  |
| 115°   | 11.3 | 6.9  | 3.8  | 2.5    | 1.9  | 1.3  | 1.3  | 1.3  | 0.6  | 0.6  | 0.6  |
| 117.5° | 12.0 | 7.6  | 3.8  | 3.1    | 1.9  | 1.3  | 1.3  | 1.3  | 1.3  | 0.6  | 0.6  |
| 120°   | 12.0 | 7.6  | 4.4  | 3.1    | 1.9  | 1.3  | 1.3  | 1.3  | 0.6  | 0.6  | 0.6  |
| 122.5° | 12.0 | 7.6  | 4.4  | 3.1    | 2.5  | 1.3  | 1.3  | 1.3  | 1.3  | 0.6  | 0.6  |
| 125°   | 12.0 | 7.6  | 4.4  | 3.1    | 2.5  | 1.3  | 1.3  | 1.3  | 0.6  | 0.6  | 0.6  |
| 127.5° | 12.0 | 8.2  | 5.0  | 3.8    | 2.5  | 1.3  | 1.3  | 0.6  | 0.6  | 0.6  | 0.6  |
| 130°   | 12.0 | 8.2  | 5.0  | 3.8    | 3.1  | 1.3  | 0.6  | 0.6  | 0.6  | 0.6  | 0.6  |
| 132.5° | 12.0 | 8.2  | 5.0  | 4.4    | 3.1  | 1.9  | 0.6  | 0.6  | 0.6  | 0.6  | 0.6  |
| 135°   | 12.0 | 8.8  | 5.7  | 4.4    | 3.8  | 1.9  | 1.3  | 0.6  | 0.6  | 0.6  | 0.6  |
| 137.5° | 12.6 | 8.8  | 5.7  | 5.0    | 3.8  | 2.5  | 1.3  | 0.6  | 0.6  | 0.6  | 0.6  |
| 140°   | 12.6 | 8.8  | 6.3  | 5.0    | 4.4  | 2.5  | 1.3  | 0.6  | 0.6  | 0.6  | 0.6  |
| 142.5° | 12.6 | 9.4  | 6.9  | 5.7    | 4.4  | 3.1  | 1.9  | 1.3  | 0.6  | 0.6  | 0.6  |
| 145°   | 13.2 | 10.1 | 7.6  | 6.3    | 5.0  | 3.8  | 2.5  | 1.3  | 0.6  | 0.6  | 0.6  |
| 147.5° | 13.2 | 10.1 | 7.6  | 6.9    | 5.7  | 3.8  | 2.5  | 1.9  | 1.3  | 0.6  | 0.6  |
| 150°   | 13.9 | 10.7 | 8.2  | 7.6    | 6.3  | 5.0  | 3.8  | 2.5  | 1.9  | 1.3  | 0.6  |
| 152.5° | 13.9 | 11.3 | 8.8  | 8.2    | 6.9  | 5.7  | 4.4  | 3.1  | 1.9  | 1.9  | 1.3  |
| 155°   | 14.5 | 12.0 | 9.4  | 8.8    | 8.2  | 6.3  | 5.0  | 3.8  | 3.1  | 2.5  | 1.9  |
| 157.5° | 15.1 | 12.6 | 10.7 | 9.4    | 8.8  | 7.6  | 6.3  | 5.0  | 3.8  | 3.1  | 2.5  |
| 160°   | 15.1 | 13.2 | 11.3 | 10.7   | 9.4  | 8.2  | 6.9  | 5.7  | 5.0  | 3.8  | 3.1  |
| 162.5° | 15.7 | 13.9 | 12.0 | 11.3   | 10.7 | 9.4  | 8.2  | 6.9  | 6.3  | 5.0  | 4.4  |
| 165°   | 16.4 | 14.5 | 13.2 | 12.6   | 12.0 | 10.7 | 9.4  | 8.2  | 7.6  | 6.9  | 5.7  |
| 167.5° | 17.0 | 15.7 | 14.5 | 13.2   | 12.6 | 12.0 | 10.7 | 9.4  | 8.8  | 8.2  | 7.6  |
| 170°   | 17.6 | 16.4 | 15.1 | 14.5   | 14.5 | 13.2 | 12.0 | 11.3 | 10.7 | 10.1 | 9.4  |
| 172.5° | 18.3 | 17.0 | 16.4 | 15.7   | 15.7 | 14.5 | 13.9 | 13.2 | 12.6 | 12.0 | 11.3 |
| 175°   | 18.9 | 18.3 | 17.6 | 17.6   | 17.0 | 16.4 | 15.7 | 15.1 | 14.5 | 13.9 | 13.9 |
| 177.5° | 19.5 | 19.5 | 18.9 | 18.9   | 18.9 | 18.3 | 17.6 | 17.6 | 17.0 | 17.0 | 16.4 |
| 180°   | 19.5 | 19.5 | 19.5 | 19.5   | 19.5 | 19.5 | 19.5 | 19.5 | 19.5 | 19.5 | 19.5 |



TEST NUMBER: P190080

CATALOG NUMBER: TRB11-LD4-15W-50-OPL-BK-UNV-EDC1

**CANDELA DISTRIBUTION (continued):**

|        | 150° | 155° | 157.5° | 160° | 165° | 170° | 175° | 180° |
|--------|------|------|--------|------|------|------|------|------|
| 0°     | 34.6 | 34.6 | 34.6   | 34.6 | 34.6 | 34.6 | 34.6 | 34.6 |
| 2.5°   | 27.7 | 27.7 | 27.7   | 27.7 | 27.1 | 27.1 | 27.1 | 27.1 |
| 5°     | 23.3 | 22.7 | 22.7   | 22.7 | 22.0 | 21.4 | 21.4 | 21.4 |
| 7.5°   | 18.9 | 18.3 | 18.3   | 18.3 | 17.6 | 17.0 | 17.0 | 17.0 |
| 10°    | 15.7 | 15.1 | 14.5   | 14.5 | 13.9 | 13.2 | 13.2 | 13.2 |
| 12.5°  | 12.0 | 11.3 | 10.7   | 10.7 | 10.1 | 9.4  | 9.4  | 9.4  |
| 15°    | 9.4  | 8.2  | 8.2    | 8.2  | 6.9  | 6.9  | 6.3  | 6.3  |
| 17.5°  | 6.9  | 6.3  | 5.7    | 5.7  | 5.0  | 4.4  | 4.4  | 4.4  |
| 20°    | 4.4  | 3.8  | 3.8    | 3.1  | 3.1  | 2.5  | 2.5  | 2.5  |
| 22.5°  | 3.1  | 2.5  | 1.9    | 1.9  | 1.3  | 1.3  | 1.3  | 1.3  |
| 25°    | 1.9  | 1.3  | 0.6    | 0.6  | 0.6  | 0.6  | 0.0  | 0.0  |
| 27.5°  | 0.6  | 0.6  | 0.6    | 0.6  | 0.6  | 0.0  | 0.0  | 0.0  |
| 30°    | 0.6  | 0.6  | 0.6    | 0.6  | 0.6  | 0.0  | 0.0  | 0.0  |
| 32.5°  | 0.6  | 0.6  | 0.6    | 0.6  | 0.6  | 0.0  | 0.0  | 0.0  |
| 35°    | 0.6  | 0.6  | 0.6    | 0.6  | 0.6  | 0.0  | 0.0  | 0.0  |
| 37.5°  | 0.6  | 0.6  | 0.6    | 0.6  | 0.6  | 0.0  | 0.0  | 0.0  |
| 40°    | 0.6  | 0.6  | 0.6    | 0.6  | 0.6  | 0.0  | 0.0  | 0.0  |
| 42.5°  | 0.6  | 0.6  | 0.6    | 0.6  | 0.6  | 0.0  | 0.0  | 0.0  |
| 45°    | 0.6  | 0.6  | 0.6    | 0.6  | 0.6  | 0.0  | 0.0  | 0.0  |
| 47.5°  | 0.6  | 0.6  | 0.6    | 0.6  | 0.6  | 0.0  | 0.0  | 0.0  |
| 50°    | 0.6  | 0.6  | 0.6    | 0.6  | 0.6  | 0.0  | 0.0  | 0.0  |
| 52.5°  | 0.6  | 0.6  | 0.6    | 0.6  | 0.6  | 0.6  | 0.0  | 0.6  |
| 55°    | 0.6  | 0.6  | 0.6    | 0.6  | 0.6  | 0.6  | 0.6  | 0.6  |
| 57.5°  | 0.6  | 0.6  | 0.6    | 0.6  | 0.6  | 0.6  | 0.6  | 0.6  |
| 60°    | 0.6  | 0.6  | 0.6    | 0.6  | 0.6  | 0.6  | 0.6  | 0.6  |
| 62.5°  | 0.6  | 0.6  | 0.6    | 0.6  | 0.6  | 0.6  | 0.6  | 0.6  |
| 65°    | 0.6  | 0.6  | 0.6    | 0.6  | 0.6  | 0.6  | 0.6  | 0.6  |
| 67.5°  | 0.6  | 0.6  | 0.6    | 0.6  | 0.6  | 0.6  | 0.6  | 0.6  |
| 70°    | 0.6  | 0.6  | 0.6    | 0.6  | 0.6  | 0.6  | 0.6  | 0.6  |
| 72.5°  | 1.3  | 0.6  | 0.6    | 0.6  | 0.6  | 0.6  | 0.6  | 0.6  |
| 75°    | 1.3  | 1.3  | 1.3    | 1.3  | 1.3  | 1.3  | 0.6  | 0.6  |
| 77.5°  | 1.3  | 1.3  | 1.3    | 1.3  | 1.3  | 0.6  | 1.3  | 0.6  |
| 80°    | 1.3  | 1.3  | 1.3    | 1.3  | 1.3  | 1.3  | 1.3  | 0.6  |
| 82.5°  | 1.3  | 1.3  | 1.3    | 1.3  | 0.6  | 0.6  | 0.6  | 0.6  |
| 85°    | 0.6  | 0.6  | 0.6    | 0.6  | 0.6  | 0.6  | 0.6  | 0.6  |
| 87.5°  | 0.6  | 0.6  | 0.6    | 0.6  | 0.6  | 0.6  | 0.6  | 0.6  |
| 90°    | 0.6  | 0.6  | 0.6    | 0.6  | 0.6  | 0.6  | 0.6  | 0.6  |
| 92.5°  | 0.6  | 0.6  | 0.6    | 0.6  | 0.6  | 0.6  | 0.6  | 0.6  |
| 95°    | 0.6  | 0.6  | 0.6    | 0.6  | 0.6  | 0.6  | 0.6  | 0.6  |
| 97.5°  | 0.6  | 0.6  | 0.6    | 0.6  | 0.6  | 0.6  | 0.6  | 0.6  |
| 100°   | 0.6  | 0.6  | 0.6    | 0.6  | 0.6  | 0.6  | 0.6  | 0.6  |
| 102.5° | 0.6  | 0.6  | 0.6    | 0.6  | 0.6  | 0.6  | 0.6  | 0.6  |
| 105°   | 0.6  | 0.6  | 0.6    | 0.6  | 0.6  | 0.6  | 0.6  | 0.6  |
| 107.5° | 0.6  | 0.6  | 0.6    | 0.6  | 0.6  | 0.6  | 0.6  | 0.6  |
| 110°   | 0.6  | 0.6  | 0.6    | 0.6  | 0.6  | 0.6  | 0.6  | 0.6  |



TEST NUMBER: P190080

CATALOG NUMBER: TRB11-LD4-15W-50-OPL-BK-UNV-EDC1

**CANDELA DISTRIBUTION (continued):**

|        | 150° | 155° | 157.5° | 160° | 165° | 170° | 175° | 180° |
|--------|------|------|--------|------|------|------|------|------|
| 112.5° | 0.6  | 0.6  | 0.6    | 0.6  | 0.6  | 0.6  | 0.6  | 0.0  |
| 115°   | 0.6  | 0.6  | 0.6    | 0.6  | 0.6  | 0.6  | 0.6  | 0.6  |
| 117.5° | 0.6  | 0.6  | 0.6    | 0.6  | 0.6  | 0.6  | 0.6  | 0.6  |
| 120°   | 0.6  | 0.6  | 0.6    | 0.6  | 0.6  | 0.6  | 0.6  | 0.6  |
| 122.5° | 0.6  | 0.6  | 0.6    | 0.6  | 0.6  | 0.6  | 0.6  | 0.6  |
| 125°   | 0.6  | 0.6  | 0.6    | 0.6  | 0.6  | 0.6  | 0.6  | 0.6  |
| 127.5° | 0.6  | 0.6  | 0.6    | 0.6  | 0.6  | 0.6  | 0.6  | 0.6  |
| 130°   | 0.6  | 0.6  | 0.6    | 0.6  | 0.6  | 0.6  | 0.0  | 0.6  |
| 132.5° | 0.6  | 0.6  | 0.6    | 0.6  | 0.6  | 0.6  | 0.0  | 0.0  |
| 135°   | 0.6  | 0.6  | 0.6    | 0.6  | 0.6  | 0.6  | 0.6  | 0.6  |
| 137.5° | 0.6  | 0.6  | 0.6    | 0.6  | 0.6  | 0.0  | 0.0  | 0.0  |
| 140°   | 0.6  | 0.6  | 0.6    | 0.6  | 0.6  | 0.0  | 0.0  | 0.0  |
| 142.5° | 0.6  | 0.6  | 0.6    | 0.6  | 0.6  | 0.0  | 0.0  | 0.0  |
| 145°   | 0.6  | 0.6  | 0.6    | 0.6  | 0.6  | 0.0  | 0.0  | 0.0  |
| 147.5° | 0.6  | 0.6  | 0.6    | 0.6  | 0.0  | 0.0  | 0.0  | 0.0  |
| 150°   | 0.6  | 0.6  | 0.6    | 0.6  | 0.6  | 0.0  | 0.0  | 0.0  |
| 152.5° | 0.6  | 0.6  | 0.6    | 0.6  | 0.6  | 0.0  | 0.0  | 0.0  |
| 155°   | 1.3  | 0.6  | 0.6    | 0.6  | 0.6  | 0.6  | 0.6  | 0.0  |
| 157.5° | 1.9  | 1.3  | 1.3    | 1.3  | 1.3  | 0.6  | 0.6  | 0.6  |
| 160°   | 3.1  | 2.5  | 1.9    | 1.9  | 1.9  | 1.3  | 1.3  | 1.3  |
| 162.5° | 3.8  | 3.1  | 3.1    | 3.1  | 2.5  | 2.5  | 2.5  | 2.5  |
| 165°   | 5.7  | 5.0  | 4.4    | 4.4  | 3.8  | 3.8  | 3.8  | 3.8  |
| 167.5° | 6.9  | 6.3  | 6.3    | 5.7  | 5.7  | 5.7  | 5.0  | 5.0  |
| 170°   | 8.8  | 8.2  | 8.2    | 7.6  | 7.6  | 7.6  | 6.9  | 7.6  |
| 172.5° | 10.7 | 10.1 | 10.1   | 10.1 | 9.4  | 9.4  | 9.4  | 9.4  |
| 175°   | 13.2 | 13.2 | 12.6   | 12.6 | 12.6 | 12.0 | 12.0 | 12.0 |
| 177.5° | 16.4 | 15.7 | 15.7   | 15.7 | 15.7 | 15.7 | 15.1 | 15.7 |
| 180°   | 19.5 | 19.5 | 19.5   | 19.5 | 19.5 | 19.5 | 19.5 | 19.5 |

(END OF REPORT)