

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: P190126

Luminaire Tested: **TRF11-LD4-10W-50-OPL-BK-UNV-EDC1-CSTG**

Issue Date: 3/3/2020



Test Information

Test Method: LM-79-08
Report Number: P190126
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (P27875)
Test Lab: INNOVATION CENTER(G2)
Issue Date: 3/3/2020
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: FAIL-SAFE
Catalog Number: TRF11-LD4-10W-50-OPL-BK-UNV-EDC1-CSTG
Description: TERRAPIN 11" LED SHALLOW CAST WALL MOUNT WITH OPEN OPAL LENS AND QUAD LENS COVER
Light Source: (56) NICHIA 5000 NF2L757DRT
Ballast/Driver: OSRAM ELECTRONIC DRIVER PROGRAMMED AT 200mA OT25W/1

Summary

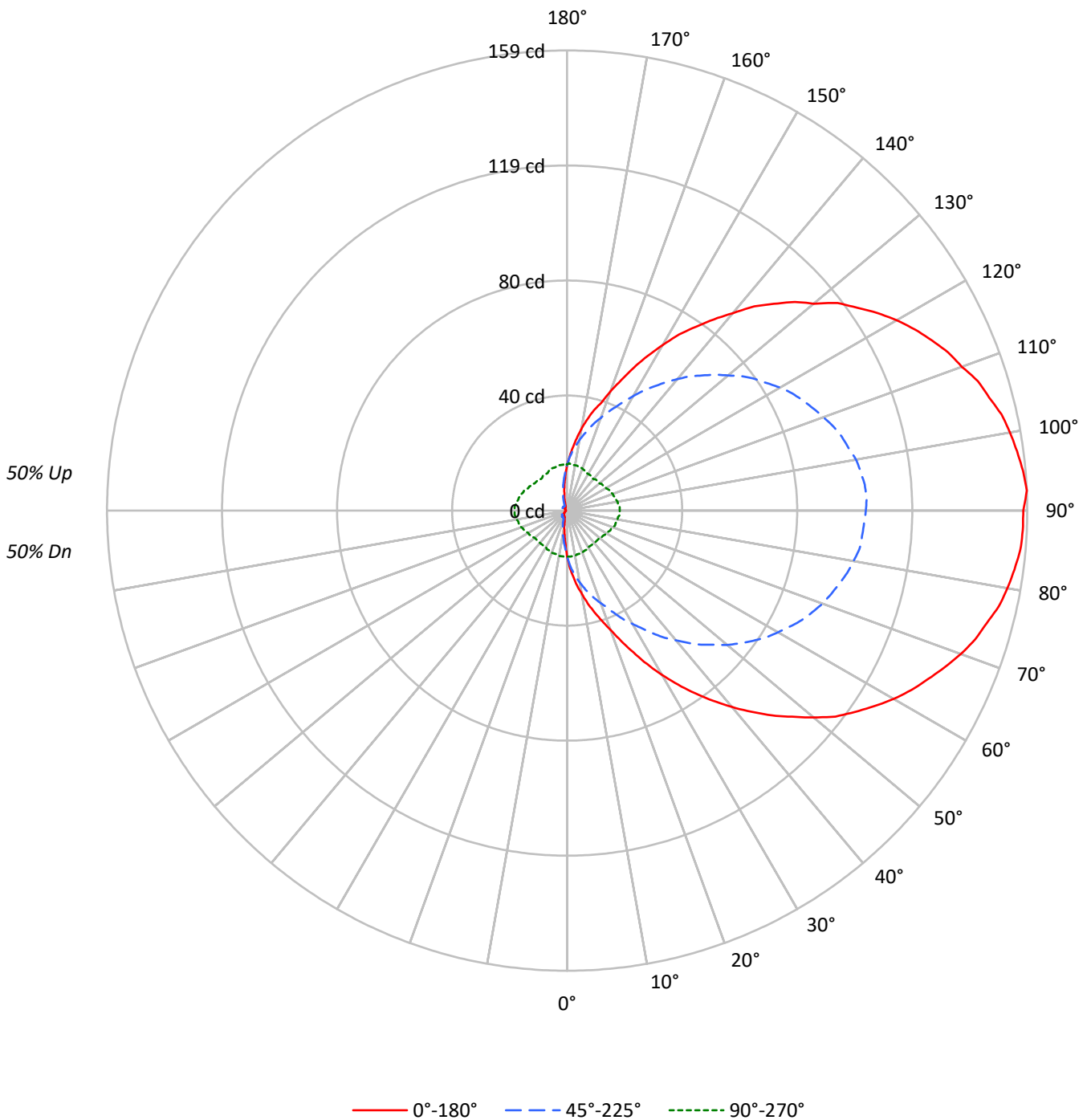
Lumens per Lamp: N/A
Luminaire Lumens: 486.0 lumens
Efficiency: N/A
Efficacy: 48.6 lumens/watt
Spacing Criteria (0/90/45): 3.52 / 1.41 / 2.85
Luminous Opening: Rectangular w/ Sides (W: 0.92' x L: 0.29' x H: 0.92')
CIE Type: General Diffuse

Input Watts (W): 10
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: 25 FT

TEST NUMBER: P190126

CATALOG NUMBER: TRF11-LD4-10W-50-OPL-BK-UNV-EDC1-CSTG

Luminous Intensity Polar Plot





TEST NUMBER: P190126

CATALOG NUMBER: TRF11-LD4-10W-50-OPL-BK-UNV-EDC1-CSTG

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	107	107	107	107	99	99	99	99	83	83	83	69	69	69	56	56	56	50
1	92	85	79	74	84	78	73	68	65	60	57	52	49	46	41	38	36	30
2	82	71	63	56	74	65	58	51	53	48	43	43	38	34	33	29	26	21
3	73	61	52	44	66	56	47	40	45	39	33	36	31	27	27	23	20	16
4	66	53	43	36	60	48	40	33	39	32	27	31	26	21	23	19	16	12
5	60	46	37	30	55	42	34	27	35	28	22	27	22	18	20	16	13	9
6	55	41	32	25	50	38	29	23	31	24	19	24	19	15	18	14	11	8
7	51	37	28	21	46	34	25	20	27	21	16	22	16	13	16	12	9	6
8	47	33	24	18	43	30	22	17	25	18	14	20	15	11	15	11	8	5
9	44	30	22	16	40	27	20	15	23	16	12	18	13	9	14	10	7	5
10	41	27	19	14	37	25	18	13	21	15	11	17	12	8	13	9	6	4

AVERAGE LUMINANCE (cd/sqm):

	0°	90°	180°
0°	640	640	640
5°	716	591	295
10°	768	553	153
15°	821	510	70
20°	875	487	54
25°	973	457	40
30°	1082	430	36
35°	1184	422	28
40°	1280	417	26
45°	1376	416	25
50°	1468	417	17
55°	1551	436	12
60°	1627	457	11
65°	1695	497	11
70°	1769	528	5
75°	1834	569	5
80°	1903	615	5
85°	1967	676	5



TEST NUMBER: P190126

CATALOG NUMBER: TRF11-LD4-10W-50-OPL-BK-UNV-EDC1-CSTG

ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	1.6	0.3
10°-20°	5.1	1.0
20°-30°	10.0	2.1
30°-40°	17.1	3.5
40°-50°	25.8	5.3
50°-60°	35.0	7.2
60°-70°	43.7	9.0
70°-80°	50.5	10.4
80°-90°	54.2	11.2
90°-100°	54.5	11.2
100°-110°	50.6	10.4
110°-120°	43.8	9.0
120°-130°	35.1	7.2
130°-140°	25.8	5.3
140°-150°	17.0	3.5
150°-160°	9.9	2.0
160°-170°	5.0	1.0
170°-180°	1.5	0.3
0°-30°	16.6	3.4
0°-40°	33.7	6.9
0°-60°	94.5	19.5
0°-90°	242.9	50.0
90°-120°	148.9	30.6
90°-150°	226.7	46.7
90°-180°	243.0	50.0
0°-180°	486.0	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	16	16	16	16	16	
5°	23	21	16	12	9	2
15°	36	30	16	6	3	11
25°	54	39	15	3	2	25
35°	77	52	15	3	2	49
45°	100	66	15	2	2	78
55°	121	78	15	2	1	109
65°	138	90	16	2	1	137
75°	150	97	17	2	0	159
85°	157	102	18	2	0	128
90°	158	103	18	2	0	87
95°	158	103	18	2	0	129
105°	151	98	17	2	0	160
115°	139	90	16	2	0	138
125°	122	79	15	2	1	110
135°	101	66	15	2	1	78
145°	78	52	15	2	1	49
155°	54	39	15	2	1	26
165°	36	29	16	5	3	10
175°	22	20	16	12	10	2
180°	16	16	16	16	16	



TEST NUMBER: P190126

CATALOG NUMBER: TRF11-LD4-10W-50-OPL-BK-UNV-EDC1-CSTG

CANDELA DISTRIBUTION (FULL):

	0°	5°	10°	15°	20°	22.5°	25°	30°	35°	40°	45°
0°	15.9	15.9	15.9	15.9	15.9	15.9	15.9	15.9	15.9	15.9	15.9
2.5°	19.5	19.0	19.0	19.0	19.0	19.0	19.0	19.0	18.6	18.6	18.6
5°	22.6	22.6	22.6	22.6	22.1	22.1	22.1	21.7	21.7	21.3	20.8
7.5°	26.1	26.1	25.7	25.7	25.2	25.2	24.8	24.8	24.4	23.5	23.0
10°	29.2	29.2	29.2	28.8	28.3	28.3	27.9	27.5	27.0	26.1	25.2
12.5°	32.8	32.8	32.3	31.9	31.4	31.4	31.0	30.1	29.7	28.3	27.5
15°	36.3	36.3	35.9	35.4	35.0	34.5	34.1	33.2	32.3	31.0	29.7
17.5°	39.9	39.9	39.4	39.0	38.1	37.6	37.2	35.9	35.0	33.7	31.9
20°	43.8	43.8	43.0	42.1	41.2	40.7	40.3	39.0	37.2	35.9	34.1
22.5°	48.7	48.7	47.8	46.5	45.6	44.7	44.3	42.5	40.7	38.5	36.3
25°	54.0	54.0	53.1	51.8	50.5	49.6	48.3	46.5	44.3	41.6	39.4
27.5°	59.8	59.3	58.9	57.1	55.4	54.5	53.1	50.9	48.3	45.2	42.5
30°	65.5	65.5	64.7	62.4	60.7	59.8	58.0	55.4	52.3	48.7	45.2
32.5°	71.3	70.9	70.0	68.2	66.0	64.7	63.3	60.2	56.2	52.3	48.3
35°	77.1	76.6	75.7	73.5	71.3	69.5	68.2	64.7	60.7	56.2	51.8
37.5°	82.8	82.8	81.5	79.3	76.6	74.8	73.1	69.5	65.1	60.2	55.4
40°	88.6	88.6	87.2	84.6	81.9	80.2	78.4	74.0	69.1	64.2	58.5
42.5°	94.3	93.9	92.6	90.3	87.2	85.5	83.3	78.8	73.5	67.8	62.0
45°	100.1	99.6	98.3	95.7	92.1	90.3	88.1	83.3	77.9	71.7	65.5
47.5°	105.4	105.0	103.6	101.0	97.4	95.2	93.0	87.7	81.9	75.7	68.6
50°	111.2	110.3	108.5	105.8	101.9	99.6	97.4	92.1	85.9	79.3	72.2
52.5°	116.9	116.5	113.8	110.3	106.7	104.5	101.9	96.5	89.9	82.8	75.3
55°	121.3	120.9	118.7	116.0	111.2	108.5	105.8	100.5	93.4	86.4	78.4
57.5°	125.8	125.3	123.1	120.5	116.5	113.4	110.3	104.1	97.0	89.5	81.5
60°	130.2	129.8	127.5	124.4	120.5	117.8	114.3	107.6	100.5	92.6	84.1
62.5°	134.2	133.7	131.5	128.0	124.0	121.3	118.2	111.2	103.6	95.7	86.8
65°	137.7	137.3	135.1	132.0	127.5	124.9	121.8	114.7	106.7	98.3	89.5
67.5°	141.3	140.8	138.6	135.1	130.6	128.0	124.9	118.2	109.4	101.0	91.7
70°	144.8	143.9	141.7	138.6	133.7	131.1	128.0	120.9	112.5	103.6	93.9
72.5°	147.9	147.0	144.8	141.3	136.4	133.7	130.6	123.6	115.1	105.8	95.7
75°	150.1	149.7	147.0	143.5	139.1	136.0	132.9	125.8	117.4	107.2	97.4
77.5°	152.8	151.4	149.2	145.7	140.8	138.2	135.1	127.5	119.6	109.4	99.2
80°	154.5	153.7	151.4	147.5	142.6	139.9	136.4	129.3	120.9	110.7	100.5
82.5°	155.9	155.0	152.8	149.2	143.9	141.3	137.7	130.6	122.2	111.6	101.9
85°	157.2	156.3	153.7	150.1	145.2	142.2	139.1	131.5	123.1	112.9	102.3
87.5°	157.6	156.8	154.5	150.6	145.7	142.6	139.5	132.0	123.6	113.8	102.7
90°	157.6	156.8	154.5	151.0	145.7	143.0	139.5	132.4	123.6	113.8	103.2
92.5°	159.0	157.6	155.4	151.9	146.6	143.5	140.4	132.9	124.4	114.3	103.6
95°	158.1	157.2	155.0	151.0	146.1	143.0	139.9	132.4	124.0	113.4	103.2
97.5°	156.8	156.3	153.7	150.1	145.2	142.2	139.1	131.5	123.1	112.5	102.3
100°	155.4	154.5	152.3	148.3	143.5	140.8	137.3	130.2	121.8	111.2	101.4
102.5°	153.7	152.3	150.1	146.6	141.7	139.1	135.5	128.4	120.0	109.8	99.6
105°	151.0	150.6	148.3	144.4	139.5	136.8	133.7	126.7	118.2	108.1	98.3
107.5°	148.8	147.9	145.7	141.7	137.3	134.2	131.1	124.4	116.0	106.3	96.5
110°	145.2	144.8	142.6	139.1	134.6	131.5	128.4	121.8	112.9	104.1	94.3



TEST NUMBER: P190126

CATALOG NUMBER: TRF11-LD4-10W-50-OPL-BK-UNV-EDC1-CSTG

CANDELA DISTRIBUTION (continued):

	0°	5°	10°	15°	20°	22.5°	25°	30°	35°	40°	45°
112.5°	142.6	141.7	139.5	136.0	131.5	128.9	125.8	119.1	110.3	101.9	92.1
115°	139.1	138.2	136.0	132.9	128.0	125.3	122.7	116.0	107.6	99.2	89.9
117.5°	135.5	134.2	132.4	128.9	124.9	122.2	119.6	111.6	104.5	96.5	87.7
120°	131.5	130.2	128.4	125.3	120.9	118.2	115.6	108.5	101.4	93.4	85.0
122.5°	127.1	126.2	124.0	121.3	116.9	113.8	111.2	105.0	97.9	90.3	81.9
125°	122.2	121.3	119.6	116.5	111.6	109.4	106.7	101.0	94.3	86.8	79.3
127.5°	117.8	116.5	114.7	111.2	107.2	105.0	102.7	97.0	90.8	83.7	76.2
130°	111.2	110.7	108.9	106.3	102.7	100.5	98.3	92.6	86.8	80.2	72.6
132.5°	106.7	105.4	104.1	101.4	97.9	95.7	93.9	88.6	82.8	76.2	69.5
135°	101.0	100.1	98.8	96.1	93.0	91.2	89.0	84.1	78.8	72.6	66.0
137.5°	95.7	94.8	93.4	91.2	88.1	85.9	84.1	79.7	74.4	68.6	62.9
140°	89.0	88.6	87.2	85.0	82.4	80.6	79.3	74.8	70.0	64.7	59.3
142.5°	83.3	82.8	81.5	79.7	77.1	75.3	74.0	70.0	65.5	60.7	55.8
145°	77.5	77.1	76.2	74.0	71.7	70.4	68.6	65.1	61.1	57.1	52.3
147.5°	72.2	71.7	70.4	68.6	66.4	65.5	63.8	60.7	57.1	53.1	49.2
150°	66.0	65.5	64.7	63.3	61.1	60.2	58.9	55.8	52.7	49.6	45.6
152.5°	60.2	59.8	58.9	57.6	55.8	54.9	54.0	50.9	48.3	45.6	42.5
155°	54.5	54.0	53.1	52.3	50.5	50.0	48.7	46.5	44.3	42.1	39.4
157.5°	48.7	48.7	47.8	46.9	45.6	45.2	44.3	42.5	40.7	39.0	36.8
160°	43.8	43.4	43.0	42.5	41.2	40.7	40.3	39.0	37.2	35.9	34.1
162.5°	39.0	39.0	38.5	38.1	37.6	37.2	36.8	35.4	34.5	33.2	31.9
165°	35.9	35.4	35.0	34.5	34.1	34.1	33.7	32.8	31.9	30.6	29.2
167.5°	32.3	32.3	31.9	31.4	31.0	31.0	30.6	29.7	29.2	28.3	27.0
170°	28.8	28.8	28.3	28.3	27.9	27.9	27.5	27.0	26.6	25.7	24.8
172.5°	25.2	25.2	25.2	24.8	24.8	24.8	24.4	23.9	23.5	23.0	22.6
175°	21.7	21.7	21.7	21.3	21.3	21.3	21.3	20.8	20.8	20.4	20.4
177.5°	18.6	18.6	18.2	18.6	18.2	18.6	18.2	18.2	18.2	18.2	18.2
180°	15.9	15.9	15.9	15.9	15.9	15.9	15.9	15.9	15.9	15.9	15.9



TEST NUMBER: P190126

CATALOG NUMBER: TRF11-LD4-10W-50-OPL-BK-UNV-EDC1-CSTG

CANDELA DISTRIBUTION (continued):

	50°	55°	60°	65°	67.5°	70°	75°	80°	85°	90°	95°
0°	15.9	15.9	15.9	15.9	15.9	15.9	15.9	15.9	15.9	15.9	15.9
2.5°	18.2	18.2	17.7	17.7	17.7	17.3	17.3	16.8	16.4	15.9	15.9
5°	20.4	19.9	19.5	19.0	18.6	18.6	17.7	17.3	16.8	15.9	15.5
7.5°	22.6	21.7	21.3	20.4	19.9	19.5	18.6	17.7	16.8	15.9	15.1
10°	24.4	23.5	22.6	21.3	20.8	20.4	19.0	18.2	16.8	15.9	15.1
12.5°	26.1	25.2	23.9	22.6	21.7	21.3	19.9	18.6	17.3	15.5	14.6
15°	28.3	27.0	25.2	23.9	23.0	22.1	20.4	18.6	17.3	15.5	14.2
17.5°	30.6	28.8	27.0	24.8	23.9	23.0	20.8	19.0	17.3	15.5	13.7
20°	32.3	30.1	27.9	26.1	24.8	23.5	21.7	19.5	17.3	15.5	13.3
22.5°	34.1	31.9	29.2	27.0	25.7	24.4	21.7	19.5	17.3	15.1	13.3
25°	36.8	33.7	30.6	27.9	26.6	25.2	22.1	19.9	17.3	15.1	12.8
27.5°	39.0	35.9	32.3	29.2	27.5	26.1	22.6	19.9	17.3	15.1	12.8
30°	41.6	38.1	34.1	30.6	28.8	26.6	23.5	20.4	17.3	14.6	12.4
32.5°	44.3	40.3	36.3	31.9	29.7	27.9	23.9	20.4	17.3	14.6	12.4
35°	47.4	42.5	38.1	33.2	31.0	28.8	24.4	20.8	17.3	14.6	12.0
37.5°	50.0	45.2	39.9	35.0	32.3	29.7	25.2	21.3	17.7	14.6	12.0
40°	53.1	47.4	42.1	36.3	33.7	31.0	25.7	21.3	17.7	14.6	12.0
42.5°	55.8	50.0	43.8	38.1	35.0	32.3	26.6	22.1	17.7	14.6	11.5
45°	58.9	52.3	45.6	39.4	36.3	33.7	27.5	22.6	18.2	14.6	11.5
47.5°	62.0	54.9	47.8	41.2	37.6	34.5	28.3	23.0	18.6	14.6	11.5
50°	64.7	57.1	49.6	42.5	39.4	35.9	29.2	23.5	18.6	14.6	11.5
52.5°	67.3	59.3	51.4	43.8	40.3	36.8	30.1	24.4	19.0	15.1	11.5
55°	70.0	61.6	53.1	45.2	41.6	38.1	31.0	24.8	19.5	15.1	11.5
57.5°	72.6	63.8	55.4	46.9	43.0	39.0	31.9	25.2	19.9	15.5	11.5
60°	74.8	66.0	56.7	47.8	43.8	40.3	32.3	26.1	20.4	15.5	11.5
62.5°	77.5	67.8	58.5	49.2	45.2	41.2	33.2	26.6	20.8	15.9	11.5
65°	79.7	70.0	60.2	50.5	46.1	42.1	34.1	27.5	21.7	16.4	11.5
67.5°	81.9	71.7	61.6	51.8	46.9	43.0	34.5	27.9	22.1	16.4	12.0
70°	83.7	73.5	62.9	52.7	47.8	43.4	35.4	28.8	22.6	16.8	12.0
72.5°	85.5	74.8	64.2	53.6	48.7	44.3	35.9	29.2	23.0	17.3	12.0
75°	87.2	76.2	65.1	54.5	49.6	44.7	36.8	29.7	23.5	17.3	12.0
77.5°	88.6	77.5	66.0	55.4	50.0	45.2	37.2	30.1	23.9	17.3	12.0
80°	89.9	78.4	66.9	55.8	50.5	45.6	37.6	31.0	24.4	17.7	12.0
82.5°	90.8	79.3	67.8	56.2	50.9	46.1	38.1	31.0	24.4	17.7	12.0
85°	91.2	80.2	68.2	56.7	51.4	46.1	38.1	31.4	24.8	18.2	12.0
87.5°	92.1	80.6	68.6	57.1	51.8	46.5	38.5	31.9	24.8	18.2	12.0
90°	92.1	80.6	69.1	57.1	51.8	46.5	38.5	31.9	24.8	18.2	12.0
92.5°	92.6	81.0	69.1	57.6	51.8	46.5	38.5	31.9	24.8	18.2	12.4
95°	92.1	80.6	68.6	57.1	51.8	46.5	38.5	31.4	24.8	18.2	12.0
97.5°	91.2	79.7	68.2	56.7	51.4	46.1	38.1	31.0	24.4	17.7	12.0
100°	90.3	78.8	67.3	56.2	50.9	45.6	37.6	31.0	24.4	17.7	12.0
102.5°	89.0	77.9	66.4	55.4	50.5	45.2	37.2	30.1	23.9	17.3	12.0
105°	87.7	76.6	65.5	54.9	49.6	44.7	36.8	29.7	23.5	17.3	12.0
107.5°	86.4	75.3	64.2	54.0	48.7	44.3	35.9	29.2	23.0	16.8	12.0
110°	84.6	73.5	63.3	52.7	48.3	43.4	35.4	28.8	22.6	16.8	11.5



TEST NUMBER: P190126

CATALOG NUMBER: TRF11-LD4-10W-50-OPL-BK-UNV-EDC1-CSTG

CANDELA DISTRIBUTION (continued):

	50°	55°	60°	65°	67.5°	70°	75°	80°	85°	90°	95°
112.5°	82.4	72.2	62.0	51.8	47.4	43.0	35.0	27.9	22.1	16.4	11.5
115°	80.6	70.4	60.2	50.9	46.5	42.1	34.1	27.5	21.7	16.4	11.5
117.5°	78.4	68.6	58.9	49.6	45.6	41.2	33.7	26.6	20.8	15.9	11.5
120°	75.7	66.4	57.6	48.3	44.3	40.3	32.8	26.1	20.4	15.5	11.5
122.5°	73.5	64.2	55.8	46.9	43.4	39.4	31.9	25.7	19.9	15.5	11.5
125°	70.9	62.0	54.0	45.6	42.1	38.5	31.0	24.8	19.5	15.1	11.5
127.5°	68.2	60.2	52.3	44.3	40.7	37.2	30.6	24.4	19.0	15.1	11.5
130°	65.1	57.6	50.0	43.0	39.4	36.3	29.7	23.5	18.6	14.6	11.5
132.5°	62.4	55.4	48.3	41.6	38.1	35.0	28.8	23.0	18.6	14.6	11.5
135°	59.8	53.1	46.5	40.3	36.8	33.7	27.9	22.6	18.2	14.6	11.5
137.5°	56.7	50.5	44.3	38.5	35.4	32.8	27.0	22.1	17.7	14.6	11.5
140°	53.6	47.8	42.5	36.8	34.1	31.4	26.1	21.7	17.7	14.2	11.5
142.5°	50.5	45.2	40.3	35.0	32.8	30.1	25.2	21.3	17.3	14.2	11.5
145°	47.8	43.0	38.5	33.7	31.4	29.2	24.8	20.8	17.3	14.6	12.0
147.5°	45.2	40.7	36.3	32.3	30.1	27.9	23.9	20.4	17.3	14.6	12.0
150°	42.1	38.5	34.5	30.6	28.8	27.0	23.5	20.4	17.3	14.6	12.4
152.5°	39.4	35.9	32.8	29.2	27.5	26.1	23.0	19.9	17.3	14.6	12.4
155°	36.8	33.7	31.0	27.9	26.6	25.2	22.6	19.9	17.3	15.1	12.8
157.5°	34.1	31.9	29.2	27.0	25.7	24.4	22.1	19.5	17.3	15.1	13.3
160°	31.9	30.1	27.9	25.7	24.8	23.9	21.3	19.5	17.3	15.5	13.3
162.5°	30.1	28.3	26.6	24.8	23.9	23.0	20.8	19.0	17.3	15.5	13.7
165°	27.9	26.6	25.2	23.5	23.0	22.1	20.4	18.6	17.3	15.5	14.2
167.5°	26.1	24.8	23.9	22.6	21.7	21.3	19.9	18.6	17.3	15.9	14.6
170°	24.4	23.5	22.1	21.3	20.8	20.4	19.0	18.2	16.8	15.9	14.6
172.5°	22.1	21.7	20.8	19.9	19.5	19.5	18.6	17.7	16.8	15.9	15.1
175°	19.9	19.5	19.0	18.6	18.6	18.2	17.7	17.3	16.8	15.9	15.5
177.5°	17.7	17.7	17.7	17.3	17.3	17.3	16.8	16.8	16.4	16.4	15.9
180°	15.9	15.9	15.9	15.9	15.9	15.9	15.9	15.9	15.9	15.9	15.9



TEST NUMBER: P190126

CATALOG NUMBER: TRF11-LD4-10W-50-OPL-BK-UNV-EDC1-CSTG

CANDELA DISTRIBUTION (continued):

	100°	105°	110°	112.5°	115°	120°	125°	130°	135°	140°	145°
0°	15.9	15.9	15.9	15.9	15.9	15.9	15.9	15.9	15.9	15.9	15.9
2.5°	15.5	15.1	15.1	14.6	14.6	14.2	13.7	13.7	13.3	12.8	12.8
5°	15.1	14.6	13.7	13.7	13.3	12.8	12.4	12.0	11.5	11.1	10.6
7.5°	14.6	13.7	12.8	12.4	12.0	11.5	10.6	10.2	9.7	9.3	8.9
10°	13.7	12.8	12.0	11.5	11.1	10.2	9.3	8.9	8.4	7.5	7.1
12.5°	13.3	12.0	11.1	10.6	10.2	8.9	8.4	7.5	6.6	6.2	5.8
15°	12.8	11.5	10.2	9.7	9.3	8.0	7.1	6.6	5.8	5.3	4.4
17.5°	12.4	11.1	9.7	8.9	8.4	7.1	6.2	5.3	4.9	4.0	3.5
20°	12.0	10.2	8.9	8.4	7.5	6.2	5.3	4.4	4.0	3.5	3.1
22.5°	11.5	9.7	8.4	7.5	6.6	5.8	4.9	4.0	3.1	3.1	2.7
25°	11.1	9.3	7.5	7.1	6.2	4.9	4.0	3.5	3.1	2.7	2.7
27.5°	10.6	8.9	7.1	6.2	5.8	4.4	3.5	3.1	2.7	2.7	2.7
30°	10.2	8.4	6.6	5.8	5.3	4.0	3.1	2.7	2.7	2.7	2.7
32.5°	10.2	8.0	6.2	5.3	4.9	3.5	3.1	2.7	2.7	2.7	2.7
35°	9.7	8.0	6.2	5.3	4.4	3.1	2.7	2.7	2.7	2.7	2.2
37.5°	9.3	7.5	5.8	4.9	4.0	3.1	2.7	2.7	2.7	2.2	2.2
40°	9.3	7.1	5.3	4.4	3.5	2.7	2.7	2.7	2.7	2.2	2.2
42.5°	9.3	7.1	4.9	4.0	3.5	2.7	2.7	2.7	2.7	2.2	2.2
45°	8.9	6.6	4.9	4.0	3.1	2.7	2.7	2.7	2.2	2.2	2.2
47.5°	8.9	6.6	4.4	3.5	3.1	2.7	2.7	2.7	2.2	2.2	2.2
50°	8.9	6.2	4.0	3.5	2.7	2.7	2.7	2.7	2.2	2.2	2.2
52.5°	8.4	6.2	4.0	3.1	2.7	2.7	2.7	2.7	2.2	2.2	1.8
55°	8.4	5.8	3.5	3.1	2.7	2.7	2.7	2.2	2.2	2.2	1.8
57.5°	8.4	5.8	3.5	3.1	2.7	2.7	2.7	2.7	2.2	2.2	1.8
60°	8.0	5.3	3.5	3.1	2.7	2.7	2.7	2.2	2.2	2.2	1.8
62.5°	8.0	5.3	3.1	2.7	2.7	2.7	2.7	2.2	2.2	1.8	1.8
65°	8.0	4.9	3.1	3.1	2.7	2.7	2.7	2.2	2.2	1.8	1.8
67.5°	8.0	4.9	3.1	3.1	2.7	2.7	2.7	2.2	2.2	1.8	1.8
70°	8.0	4.9	3.1	3.1	2.7	2.7	2.7	2.2	2.2	1.8	1.8
72.5°	8.0	4.9	3.1	2.7	2.7	2.7	2.7	2.2	2.2	1.8	1.8
75°	7.5	4.4	3.1	2.7	2.7	2.7	2.7	2.2	2.2	1.8	1.8
77.5°	7.5	4.4	2.7	2.7	2.7	2.7	2.7	2.2	2.2	1.8	1.3
80°	7.5	4.4	2.7	2.7	2.7	2.7	2.7	2.2	2.2	1.8	1.8
82.5°	7.5	4.4	2.7	2.7	2.7	2.7	2.2	2.2	1.8	1.8	1.3
85°	7.5	4.4	2.7	2.7	2.7	2.7	2.2	2.2	1.8	1.8	1.3
87.5°	7.5	4.4	2.7	2.7	2.7	2.2	2.2	2.2	1.8	1.8	1.3
90°	7.5	4.0	2.7	2.7	2.7	2.2	2.2	2.2	1.8	1.3	1.3
92.5°	7.5	4.4	2.7	2.7	2.7	2.2	2.2	2.2	1.8	1.3	1.3
95°	7.5	4.4	2.7	2.7	2.7	2.2	2.2	2.2	1.8	1.8	1.3
97.5°	7.5	4.4	2.7	2.7	2.7	2.2	2.2	1.8	1.8	1.8	1.3
100°	7.5	4.4	2.7	2.7	2.2	2.2	2.2	1.8	1.8	1.8	1.3
102.5°	7.5	4.4	2.7	2.2	2.2	2.2	2.2	1.8	1.8	1.3	1.3
105°	7.5	4.4	2.7	2.2	2.2	2.2	2.2	1.8	1.8	1.3	1.3
107.5°	7.5	4.4	2.7	2.2	2.2	2.2	2.2	1.8	1.8	1.3	1.3
110°	7.5	4.4	2.7	2.2	2.2	2.2	2.2	1.8	1.8	1.3	1.3



TEST NUMBER: P190126

CATALOG NUMBER: TRF11-LD4-10W-50-OPL-BK-UNV-EDC1-CSTG

CANDELA DISTRIBUTION (continued):

	100°	105°	110°	112.5°	115°	120°	125°	130°	135°	140°	145°
112.5°	7.5	4.4	2.7	2.2	2.2	2.2	1.8	1.8	1.8	1.3	1.3
115°	8.0	4.9	2.7	2.2	2.2	2.2	2.2	1.8	1.8	1.8	1.3
117.5°	8.0	4.9	3.1	2.2	2.2	2.2	2.2	1.8	1.8	1.8	1.3
120°	8.0	5.3	3.1	2.2	2.2	2.2	2.2	1.8	1.8	1.8	1.3
122.5°	8.0	5.3	3.1	2.2	2.2	2.2	2.2	1.8	1.8	1.8	1.3
125°	8.4	5.3	3.5	2.7	2.2	2.2	1.8	1.8	1.8	1.8	1.3
127.5°	8.4	5.8	3.5	2.7	2.2	2.2	1.8	1.8	1.8	1.8	1.3
130°	8.4	5.8	4.0	3.1	2.2	2.2	1.8	1.8	1.8	1.8	1.3
132.5°	8.4	6.2	4.0	3.1	2.2	2.2	1.8	1.8	1.8	1.8	1.3
135°	8.9	6.2	4.4	3.5	2.7	2.2	1.8	1.8	1.8	1.8	1.3
137.5°	8.9	6.6	4.4	4.0	3.1	2.2	1.8	1.8	1.8	1.8	1.3
140°	8.9	6.6	4.9	4.0	3.1	2.2	1.8	1.8	1.8	1.3	1.3
142.5°	9.3	7.1	5.3	4.4	3.5	2.2	1.8	1.8	1.8	1.3	1.3
145°	9.3	7.5	5.8	4.9	4.0	2.7	1.8	1.8	1.8	1.8	1.3
147.5°	9.7	7.5	5.8	5.3	4.4	3.1	2.2	1.8	1.8	1.8	1.3
150°	10.2	8.0	6.2	5.8	4.9	3.5	2.7	1.8	1.8	1.8	1.3
152.5°	10.2	8.4	6.6	6.2	5.3	4.0	3.1	2.2	1.8	1.8	1.3
155°	10.6	8.9	7.5	6.6	5.8	4.4	3.5	2.7	2.2	1.8	1.8
157.5°	11.1	9.3	8.0	7.1	6.6	5.3	4.4	3.5	2.7	2.2	1.8
160°	11.5	10.2	8.4	8.0	7.1	6.2	4.9	4.0	3.5	2.7	2.2
162.5°	12.0	10.6	9.3	8.9	8.0	7.1	5.8	4.9	4.4	3.5	3.1
165°	12.8	11.5	10.2	9.3	8.9	8.0	7.1	6.2	5.3	4.9	4.4
167.5°	13.3	12.0	11.1	10.6	9.7	8.9	8.0	7.5	6.6	6.2	5.3
170°	13.7	12.8	12.0	11.5	11.1	10.2	9.3	8.9	8.0	7.5	7.1
172.5°	14.6	13.7	12.8	12.4	12.0	11.5	11.1	10.2	9.7	9.3	8.9
175°	15.1	14.6	14.2	13.7	13.3	12.8	12.4	12.0	11.5	11.1	10.6
177.5°	15.5	15.5	15.1	15.1	14.6	14.6	14.2	14.2	13.7	13.7	13.3
180°	15.9	15.9	15.9	15.9	15.9	15.9	15.9	15.9	15.9	15.9	15.9



TEST NUMBER: P190126

CATALOG NUMBER: TRF11-LD4-10W-50-OPL-BK-UNV-EDC1-CSTG

CANDELA DISTRIBUTION (continued):

	150°	155°	157.5°	160°	165°	170°	175°	180°
0°	15.9	15.9	15.9	15.9	15.9	15.9	15.9	15.9
2.5°	12.4	12.4	12.4	12.0	12.0	12.0	11.5	12.0
5°	10.2	10.2	9.7	9.7	9.3	9.3	9.3	9.3
7.5°	8.4	8.0	8.0	7.5	7.5	7.5	7.5	7.1
10°	6.6	6.2	6.2	6.2	5.8	5.8	5.8	5.8
12.5°	5.3	4.9	4.9	4.4	4.4	4.4	4.0	4.0
15°	4.0	4.0	3.5	3.5	3.5	3.1	3.1	3.1
17.5°	3.5	3.1	3.1	2.7	2.7	2.7	2.7	2.7
20°	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7
22.5°	2.7	2.7	2.7	2.7	2.2	2.2	2.2	2.2
25°	2.7	2.7	2.7	2.7	2.2	2.2	2.2	2.2
27.5°	2.7	2.2	2.2	2.2	2.2	2.2	2.2	2.2
30°	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2
32.5°	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2
35°	2.2	2.2	2.2	2.2	2.2	2.2	1.8	1.8
37.5°	2.2	2.2	2.2	1.8	1.8	1.8	1.8	1.8
40°	2.2	2.2	1.8	1.8	1.8	1.8	1.8	1.8
42.5°	2.2	1.8	1.8	1.8	1.8	1.8	1.8	1.8
45°	2.2	1.8	1.8	1.8	1.8	1.8	1.8	1.8
47.5°	1.8	1.8	1.8	1.8	1.8	1.3	1.3	1.3
50°	1.8	1.8	1.8	1.3	1.3	1.3	1.3	1.3
52.5°	1.8	1.8	1.8	1.3	1.3	1.3	1.3	1.3
55°	1.8	1.3	1.3	1.3	1.3	1.3	0.9	0.9
57.5°	1.8	1.3	1.3	1.3	1.3	0.9	0.9	0.9
60°	1.8	1.3	1.3	1.3	1.3	0.9	0.9	0.9
62.5°	1.8	1.3	1.3	1.3	0.9	0.9	0.9	0.9
65°	1.8	1.3	1.3	1.3	0.9	0.9	0.9	0.9
67.5°	1.3	1.3	1.3	0.9	0.9	0.9	0.4	0.4
70°	1.3	1.3	1.3	0.9	0.9	0.9	0.4	0.4
72.5°	1.3	1.3	1.3	0.9	0.9	0.9	0.4	0.4
75°	1.3	1.3	0.9	0.9	0.9	0.9	0.4	0.4
77.5°	1.3	1.3	0.9	0.9	0.9	0.4	0.4	0.4
80°	1.3	0.9	0.9	0.9	0.9	0.4	0.4	0.4
82.5°	1.3	0.9	0.9	0.9	0.9	0.4	0.4	0.4
85°	1.3	0.9	0.9	0.9	0.4	0.4	0.4	0.4
87.5°	1.3	0.9	0.9	0.9	0.4	0.4	0.4	0.4
90°	0.9	0.9	0.9	0.9	0.4	0.4	0.4	0.4
92.5°	1.3	0.9	0.9	0.9	0.4	0.4	0.4	0.4
95°	1.3	0.9	0.9	0.9	0.4	0.4	0.4	0.4
97.5°	1.3	0.9	0.9	0.9	0.4	0.4	0.4	0.4
100°	1.3	0.9	0.9	0.9	0.4	0.4	0.4	0.4
102.5°	1.3	0.9	0.9	0.9	0.4	0.4	0.4	0.4
105°	1.3	0.9	0.9	0.9	0.4	0.4	0.4	0.4
107.5°	1.3	0.9	0.9	0.9	0.4	0.4	0.4	0.4
110°	1.3	0.9	0.9	0.9	0.9	0.4	0.4	0.4



TEST NUMBER: P190126

CATALOG NUMBER: TRF11-LD4-10W-50-OPL-BK-UNV-EDC1-CSTG

CANDELA DISTRIBUTION (continued):

	150°	155°	157.5°	160°	165°	170°	175°	180°
112.5°	1.3	0.9	0.9	0.9	0.9	0.4	0.4	0.4
115°	1.3	1.3	0.9	0.9	0.9	0.9	0.4	0.4
117.5°	1.3	1.3	0.9	0.9	0.9	0.9	0.9	0.9
120°	1.3	1.3	0.9	0.9	0.9	0.9	0.9	0.9
122.5°	1.3	1.3	0.9	0.9	0.9	0.9	0.9	0.9
125°	1.3	1.3	0.9	0.9	0.9	0.9	0.9	0.9
127.5°	1.3	1.3	0.9	0.9	0.9	0.9	0.9	0.9
130°	1.3	1.3	1.3	0.9	0.9	0.9	0.9	0.9
132.5°	1.3	1.3	1.3	1.3	0.9	0.9	0.9	0.9
135°	1.3	1.3	1.3	1.3	0.9	0.9	0.9	0.9
137.5°	1.3	1.3	1.3	1.3	1.3	0.9	0.9	0.9
140°	1.3	1.3	1.3	1.3	1.3	0.9	0.9	0.9
142.5°	1.3	1.3	1.3	1.3	1.3	0.9	0.9	0.9
145°	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
147.5°	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
150°	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
152.5°	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
155°	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
157.5°	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
160°	1.8	1.8	1.3	1.3	1.3	1.3	1.3	1.3
162.5°	2.7	2.2	2.2	2.2	1.8	1.8	1.8	1.8
165°	3.5	3.1	3.1	3.1	2.7	2.7	2.7	2.7
167.5°	4.9	4.4	4.4	4.4	4.0	4.0	4.0	4.0
170°	6.6	6.2	6.2	5.8	5.8	5.3	5.3	5.3
172.5°	8.4	8.0	8.0	8.0	7.5	7.5	7.5	7.5
175°	10.6	10.2	10.2	10.2	9.7	9.7	9.7	9.7
177.5°	12.8	12.8	12.8	12.8	12.4	12.4	12.4	12.4
180°	15.9	15.9	15.9	15.9	15.9	15.9	15.9	15.9

(END OF REPORT)