

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: P190099

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

Issue Date: 3/3/2020



Test Information

Test Method: LM-79-08
Report Number: P190099
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (P27862)
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
Description: TERRAPIN 11" LED 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

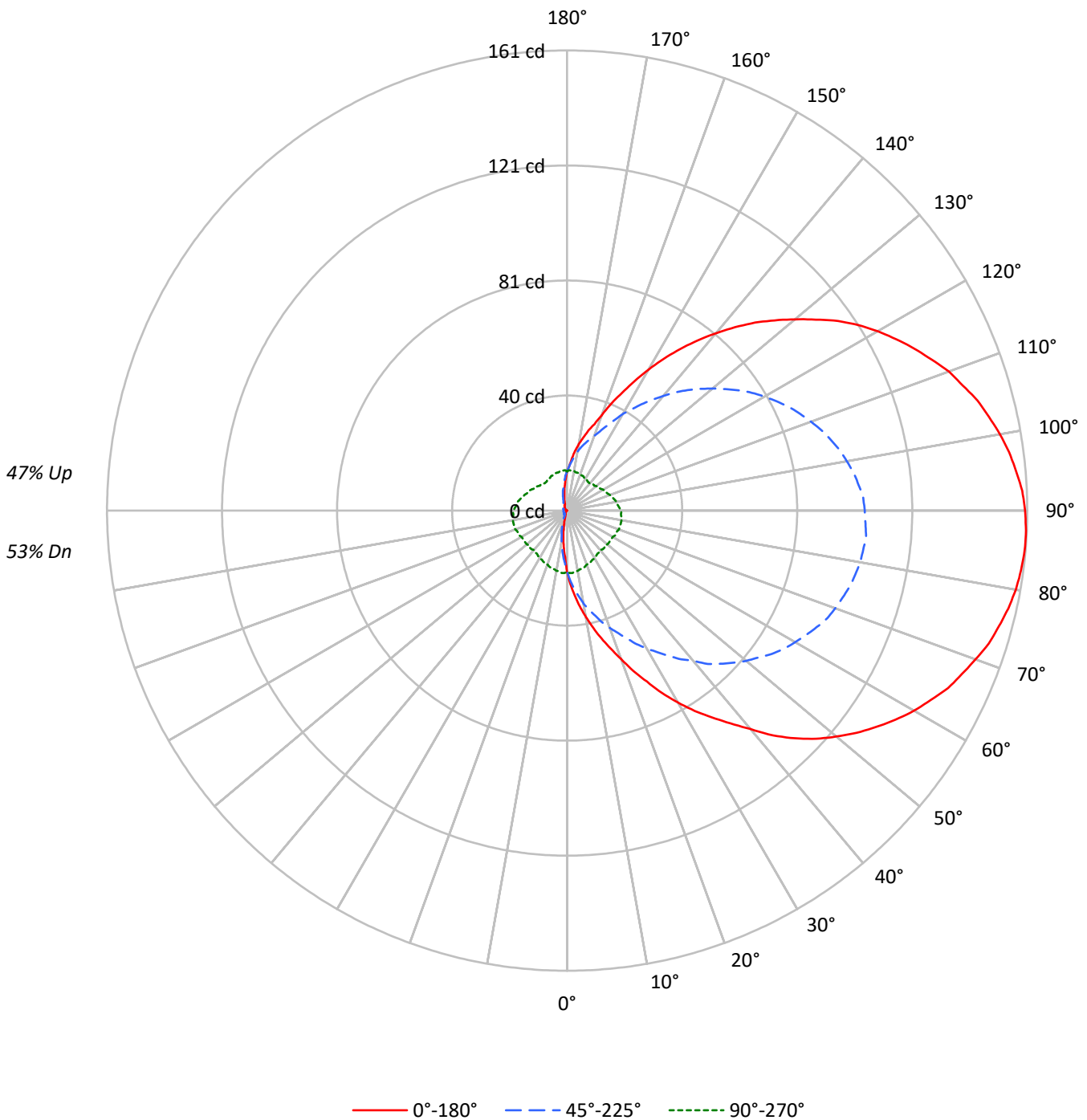
Lumens per Lamp: N/A
Luminaire Lumens: 495.0 lumens
Efficiency: N/A
Efficacy: 49.5 lumens/watt
Spacing Criteria (0/90/45): 3.12 / 1.34 / 2.56
Luminous Opening: Rectangular w/ Sides (W: 0.92' x L: 0.29' x H: 0.92')
CIE Type: General Diffuse

Input Watts (W): 10
Input Voltage (V): NR
Input Current (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

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Luminous Intensity Polar Plot





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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	108	108	108	108	100	100	100	100	85	85	85	72	72	72	59	59	59	53
1	93	86	80	74	85	79	74	69	66	62	58	54	51	48	43	41	39	33
2	82	72	64	56	75	66	59	52	55	49	44	44	40	36	35	31	28	23
3	74	62	52	44	67	56	48	41	47	40	34	38	32	28	29	25	22	17
4	67	53	44	36	61	49	40	33	40	33	28	32	27	23	25	21	17	13
5	61	47	37	30	55	43	34	28	35	28	23	29	23	19	22	18	14	11
6	56	41	32	25	51	38	29	23	32	25	19	25	20	16	20	15	12	9
7	51	37	28	22	47	34	26	20	28	21	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°	862	862	862
5°	938	814	422
10°	992	744	192
15°	1048	690	77
20°	1105	631	34
25°	1189	597	23
30°	1280	569	21
35°	1356	532	14
40°	1442	514	13
45°	1549	524	5
50°	1623	526	5
55°	1688	532	5
60°	1751	542	5
65°	1809	573	5
70°	1858	606	5
75°	1911	634	5
80°	1963	671	5
85°	2010	702	5



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	2.1	0.4
10°-20°	6.5	1.3
20°-30°	12.3	2.5
30°-40°	20.0	4.0
40°-50°	29.3	5.9
50°-60°	38.7	7.8
60°-70°	46.8	9.5
70°-80°	52.8	10.7
80°-90°	55.5	11.2
90°-100°	54.2	11.0
100°-110°	49.4	10.0
110°-120°	41.8	8.5
120°-130°	32.8	6.6
130°-140°	23.5	4.8
140°-150°	15.1	3.0
150°-160°	8.5	1.7
160°-170°	4.3	0.9
170°-180°	1.3	0.3
0°-30°	20.9	4.2
0°-40°	40.9	8.3
0°-60°	108.9	22.0
0°-90°	264.0	53.3
90°-120°	145.4	29.4
90°-150°	216.9	43.8
90°-180°	231.0	46.7
0°-180°	495.0	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	21	21	21	21	21	
5°	30	27	22	16	13	3
15°	46	38	21	7	3	13
25°	66	49	20	3	1	31
35°	88	62	18	2	1	56
45°	113	76	18	1	0	87
55°	132	87	18	1	0	118
65°	147	96	19	1	0	146
75°	156	102	19	1	0	165
85°	161	105	19	1	0	131
90°	160	104	19	1	0	88
95°	158	102	18	1	0	128
105°	149	96	17	1	0	157
115°	134	86	15	1	0	133
125°	116	73	14	2	1	104
135°	93	60	13	2	1	72
145°	69	45	12	2	2	44
155°	45	33	13	3	2	22
165°	29	24	14	6	3	8
175°	18	17	14	11	9	2
180°	14	14	14	14	14	



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CANDELA DISTRIBUTION (FULL):

	0°	5°	10°	15°	20°	22.5°	25°	30°	35°	40°	45°
0°	21.4	21.4	21.4	21.4	21.4	21.4	21.4	21.4	21.4	21.4	21.4
2.5°	25.7	25.3	25.3	25.3	25.3	25.3	24.8	24.8	24.8	24.4	24.4
5°	29.6	29.6	29.6	29.1	29.1	29.1	28.7	28.7	28.3	27.8	27.4
7.5°	33.8	33.8	33.4	33.4	33.0	32.6	32.6	32.1	31.3	30.8	30.0
10°	37.7	37.7	37.3	37.3	36.8	36.4	36.0	35.6	34.7	33.8	33.0
12.5°	42.0	42.0	41.6	41.1	40.7	40.3	39.8	39.0	37.7	36.8	35.6
15°	46.3	46.3	45.8	45.4	44.6	44.1	43.7	42.4	41.1	39.8	38.1
17.5°	50.6	50.6	49.7	49.3	48.4	48.0	47.1	45.8	44.6	42.8	41.1
20°	55.3	54.8	54.4	53.6	52.7	51.8	51.0	49.7	47.6	45.8	43.7
22.5°	60.8	60.0	59.6	58.3	57.0	56.6	55.3	53.6	51.4	48.8	46.3
25°	66.0	66.0	64.7	63.8	61.7	61.3	60.0	57.8	55.3	52.3	49.3
27.5°	72.0	71.5	70.3	69.0	67.3	66.0	65.1	62.6	59.1	56.1	52.7
30°	77.5	77.1	75.8	74.5	72.4	71.1	69.8	66.8	63.4	60.0	55.7
32.5°	83.1	82.7	81.4	79.7	77.1	75.8	74.5	71.1	67.3	63.4	58.7
35°	88.3	88.3	87.0	84.8	82.3	81.0	79.3	75.8	71.5	66.8	62.1
37.5°	93.8	93.8	92.5	90.4	87.4	85.7	84.4	80.1	75.8	70.7	65.6
40°	99.8	99.4	97.7	95.5	92.5	90.4	88.7	84.4	79.7	74.1	68.5
42.5°	106.7	106.3	104.5	102.4	99.0	97.3	95.1	90.0	84.8	79.3	72.8
45°	112.7	112.7	111.0	107.5	103.7	102.0	99.8	94.7	88.7	82.7	75.8
47.5°	118.2	117.8	115.7	113.1	108.4	106.3	104.1	98.5	92.5	86.1	78.8
50°	123.0	122.5	120.8	117.8	114.0	111.8	108.0	102.8	96.4	89.5	81.8
52.5°	127.7	127.2	125.5	122.5	118.2	116.1	113.1	106.3	99.8	92.5	84.4
55°	132.0	131.5	129.4	126.4	122.5	119.5	117.0	110.5	103.3	95.5	87.4
57.5°	136.2	135.4	133.7	130.2	126.0	123.4	120.8	114.4	106.3	98.1	90.0
60°	140.1	139.2	137.1	134.1	129.4	126.8	123.8	117.4	109.7	101.1	92.1
62.5°	143.5	142.7	140.5	137.5	132.8	129.8	127.2	120.4	112.7	103.3	94.3
65°	147.0	145.7	143.5	140.5	135.8	132.8	129.8	123.4	115.7	105.8	96.4
67.5°	149.5	148.7	146.5	143.1	138.4	135.4	132.4	125.5	117.8	108.0	98.5
70°	152.1	151.7	149.1	146.1	141.0	138.0	135.0	128.1	120.0	110.1	99.8
72.5°	154.7	153.8	151.7	148.2	143.1	140.1	137.1	129.8	121.2	112.3	101.1
75°	156.4	156.0	153.4	150.0	144.8	141.8	138.4	131.1	123.0	113.5	102.4
77.5°	158.1	157.2	155.1	151.2	146.5	143.1	140.1	132.8	124.2	114.8	103.3
80°	159.4	158.5	156.4	152.5	147.4	144.4	141.0	133.7	125.1	115.7	104.1
82.5°	160.2	159.4	156.8	153.0	148.2	145.2	141.8	134.5	126.0	116.1	104.5
85°	160.7	159.8	157.2	153.4	148.7	145.7	142.2	134.5	126.0	116.5	105.0
87.5°	160.7	159.8	157.2	153.4	148.2	145.2	141.8	134.5	126.0	116.1	104.5
90°	160.2	159.4	156.8	153.0	147.8	144.8	141.4	134.1	125.1	115.7	104.1
92.5°	159.4	158.1	156.0	152.1	147.0	144.0	140.5	133.2	124.7	115.2	103.7
95°	157.7	157.2	154.7	150.8	145.7	143.1	139.7	132.0	123.4	114.0	102.4
97.5°	156.0	155.1	153.0	149.1	144.0	141.0	138.0	130.7	122.1	112.7	101.1
100°	153.8	153.0	150.8	147.0	141.8	139.2	135.8	128.5	120.4	110.1	99.4
102.5°	151.2	150.8	148.2	144.8	139.7	137.1	133.7	126.4	118.2	107.5	97.7
105°	148.7	147.8	145.7	141.8	137.1	134.1	131.1	123.8	115.7	105.4	95.5
107.5°	145.2	144.8	142.7	138.8	134.5	131.5	128.1	121.2	113.1	103.3	93.4
110°	142.2	141.0	139.2	135.8	131.1	128.5	125.1	118.2	109.7	100.3	90.8



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CANDELA DISTRIBUTION (continued):

	0°	5°	10°	15°	20°	22.5°	25°	30°	35°	40°	45°
112.5°	138.0	137.5	135.4	132.0	127.2	124.7	121.7	114.8	106.3	97.7	88.3
115°	134.1	133.2	131.5	128.1	123.8	121.2	118.2	111.0	102.8	94.7	85.7
117.5°	129.8	129.4	127.2	123.8	120.0	117.4	114.4	106.7	99.4	91.3	82.7
120°	125.5	124.7	123.0	119.5	115.7	113.1	109.3	102.8	96.0	88.3	79.7
122.5°	120.8	120.0	117.8	115.2	111.0	107.5	105.0	99.0	92.1	84.4	76.7
125°	115.7	115.2	113.1	109.3	105.8	103.3	100.7	94.7	88.3	81.0	73.3
127.5°	109.7	108.8	107.1	104.5	100.7	98.5	96.0	90.4	84.4	77.1	69.8
130°	104.1	103.7	102.0	99.4	96.0	93.4	91.3	85.7	80.1	73.3	66.4
132.5°	98.5	98.5	96.4	94.3	90.8	88.7	86.5	81.4	75.8	69.4	63.0
135°	93.0	92.5	91.3	88.7	85.7	83.5	81.4	76.7	71.5	65.6	59.6
137.5°	87.0	87.0	85.3	83.1	80.1	78.4	76.3	72.0	66.8	61.3	56.1
140°	81.0	80.5	79.3	77.5	74.5	72.8	71.1	66.8	62.1	57.4	52.3
142.5°	75.0	74.5	73.3	71.5	69.0	67.3	65.6	61.7	57.8	53.6	48.8
145°	69.0	68.5	67.7	66.0	63.4	62.1	60.4	57.0	53.6	49.3	45.4
147.5°	63.0	62.6	61.7	60.4	58.3	56.6	55.3	52.3	49.3	45.8	42.0
150°	57.0	57.0	56.1	54.8	53.1	51.8	50.6	48.0	45.0	42.0	39.0
152.5°	51.0	51.0	50.6	49.3	47.6	46.7	45.4	43.3	40.7	38.1	35.6
155°	45.4	45.4	45.0	43.7	42.4	41.6	40.7	39.0	36.8	35.1	32.6
157.5°	40.7	40.3	39.8	39.0	38.1	37.3	36.4	35.1	33.8	32.1	30.0
160°	35.6	35.6	35.1	34.7	33.8	33.4	33.0	31.7	30.4	29.1	27.8
162.5°	31.7	31.7	31.3	30.8	30.4	30.0	30.0	29.1	28.3	27.0	26.1
165°	29.1	28.7	28.7	28.3	27.8	27.8	27.4	27.0	26.1	25.3	24.4
167.5°	26.1	26.1	26.1	26.1	25.3	25.3	25.3	24.8	24.0	23.6	22.7
170°	23.6	23.6	23.6	23.6	23.1	22.7	22.7	22.3	21.9	21.4	21.0
172.5°	21.0	21.0	21.0	20.6	20.6	20.6	20.1	20.1	19.7	19.3	18.9
175°	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	17.6	17.6	17.1
177.5°	15.4	15.4	15.4	15.9	15.4	15.4	15.4	15.9	15.4	15.4	15.4
180°	13.7	13.7	13.7	13.7	13.7	13.7	13.7	13.7	13.7	13.7	13.7



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CANDELA DISTRIBUTION (continued):

	50°	55°	60°	65°	67.5°	70°	75°	80°	85°	90°	95°
0°	21.4	21.4	21.4	21.4	21.4	21.4	21.4	21.4	21.4	21.4	21.4
2.5°	24.4	24.0	23.6	23.6	23.1	23.1	22.7	22.7	22.3	21.9	21.4
5°	27.0	26.1	25.7	25.3	24.8	24.4	24.0	23.1	22.3	21.9	21.0
7.5°	29.1	28.3	27.4	26.6	26.1	25.7	24.8	23.6	22.7	21.4	20.6
10°	31.7	30.4	29.6	28.3	27.4	27.0	25.3	24.0	22.7	21.4	20.1
12.5°	34.3	32.6	31.3	29.6	28.7	27.8	26.1	24.4	22.7	21.0	19.3
15°	36.8	34.7	33.0	30.8	30.0	29.1	27.0	24.8	22.7	21.0	18.9
17.5°	39.0	36.8	34.7	32.1	31.3	30.0	27.4	25.3	22.7	20.6	18.4
20°	41.1	38.6	36.0	33.4	32.1	30.8	28.3	25.3	22.7	20.1	18.0
22.5°	43.3	40.7	37.7	34.7	33.0	31.7	28.7	25.7	22.7	20.1	17.6
25°	45.8	42.8	39.4	36.0	34.3	32.6	29.1	25.7	22.7	19.7	16.7
27.5°	48.8	45.0	41.1	37.3	35.1	33.4	29.6	26.1	22.7	19.3	16.3
30°	51.4	47.6	43.3	38.6	36.4	34.3	30.0	26.1	22.7	19.3	16.3
32.5°	54.4	49.7	45.0	39.8	37.7	35.1	30.4	26.1	22.3	18.9	15.4
35°	57.0	51.8	46.7	41.6	39.0	36.4	31.3	26.6	22.3	18.4	15.4
37.5°	60.0	54.4	48.4	42.8	39.8	37.3	31.7	27.0	22.3	18.4	15.0
40°	62.6	56.6	50.1	44.1	41.1	38.1	32.6	27.0	22.3	18.0	14.6
42.5°	66.0	59.6	52.7	46.3	42.8	39.8	33.4	27.8	22.7	18.4	14.6
45°	69.0	61.7	54.8	47.6	44.1	40.7	33.8	27.8	22.7	18.4	14.6
47.5°	71.5	63.8	56.1	48.8	45.4	41.6	34.7	28.3	22.7	18.0	14.1
50°	74.1	66.0	57.8	50.1	46.3	42.8	35.1	28.7	23.1	18.4	14.1
52.5°	76.3	68.1	59.6	51.4	47.6	43.7	36.0	29.1	23.1	18.4	14.1
55°	78.8	69.8	61.3	52.7	48.4	44.1	36.4	29.6	23.6	18.4	14.1
57.5°	81.0	71.5	62.6	53.6	49.3	45.0	36.8	30.0	23.6	18.4	13.7
60°	82.7	73.3	63.8	54.4	50.1	45.8	37.3	30.0	24.0	18.4	13.7
62.5°	84.8	75.0	64.7	55.3	50.6	46.3	37.7	30.4	24.4	18.9	13.7
65°	86.5	76.3	66.0	56.1	51.4	46.7	38.1	30.8	24.4	18.9	13.7
67.5°	88.3	77.5	67.3	57.0	51.8	47.1	38.6	31.3	24.8	18.9	13.7
70°	89.5	78.8	68.1	57.4	52.3	47.6	39.0	31.7	25.3	19.3	13.7
72.5°	90.8	79.7	68.5	57.8	52.7	48.0	39.0	32.1	25.3	19.3	13.3
75°	91.7	80.5	69.4	58.3	53.1	48.0	39.4	32.1	25.7	19.3	13.3
77.5°	92.5	81.4	69.8	58.7	53.1	48.0	39.4	32.6	25.7	19.3	13.3
80°	93.0	81.8	70.3	58.7	53.6	48.4	39.4	32.6	25.7	19.3	13.3
82.5°	93.4	82.3	70.3	58.7	53.6	48.0	39.8	33.0	26.1	19.3	12.9
85°	93.4	82.3	70.3	58.7	53.1	48.0	39.8	33.0	25.7	18.9	12.9
87.5°	93.4	81.8	70.3	58.7	53.1	48.0	39.8	32.6	25.7	18.9	12.9
90°	93.0	81.4	69.8	58.3	52.7	47.6	39.4	32.6	25.7	18.9	12.4
92.5°	92.5	81.0	69.0	57.4	52.3	47.1	39.0	32.1	25.3	18.4	12.4
95°	91.3	79.7	68.1	57.0	51.4	46.3	38.6	31.7	24.8	18.0	12.0
97.5°	90.0	78.8	67.3	56.1	51.0	45.8	38.1	31.3	24.4	17.6	12.0
100°	88.7	77.5	66.0	55.3	50.1	45.4	37.3	30.8	24.0	17.6	11.6
102.5°	87.0	76.3	64.7	54.0	49.3	44.6	36.8	30.0	23.6	17.1	11.6
105°	84.8	74.1	63.4	53.1	48.4	43.7	36.0	29.1	22.7	16.7	11.6
107.5°	83.1	72.4	62.1	51.8	47.1	42.8	35.1	28.3	22.3	16.3	11.1
110°	81.0	70.7	60.4	50.6	46.3	42.0	34.3	27.4	21.4	15.9	11.1



TEST NUMBER: P190099

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

CANDELA DISTRIBUTION (continued):

	50°	55°	60°	65°	67.5°	70°	75°	80°	85°	90°	95°
112.5°	78.4	68.5	58.7	49.3	45.0	41.1	33.4	27.0	21.0	15.4	10.7
115°	76.3	66.4	57.0	48.0	43.7	39.8	32.6	26.1	20.1	15.0	10.7
117.5°	73.7	64.3	55.3	46.7	42.4	39.0	31.7	25.3	19.7	15.0	10.7
120°	70.7	62.1	53.1	45.0	41.1	37.7	30.8	24.4	18.9	14.6	10.7
122.5°	68.1	59.6	51.4	43.7	39.8	36.4	29.6	23.6	18.4	14.1	10.3
125°	65.1	57.4	49.3	42.0	38.6	35.1	28.7	22.7	18.0	13.7	10.3
127.5°	62.1	54.8	47.1	40.3	37.3	33.8	27.8	22.3	17.6	13.7	10.3
130°	59.1	52.3	45.0	38.6	35.6	32.6	26.6	21.4	16.7	13.3	10.3
132.5°	56.1	49.7	43.3	37.3	34.3	31.3	25.7	20.6	16.3	12.9	10.3
135°	53.1	47.1	41.1	35.6	32.6	30.0	24.8	20.1	15.9	12.9	10.3
137.5°	50.1	44.6	39.0	33.8	31.3	28.7	23.6	19.3	15.9	12.9	10.3
140°	47.1	42.0	36.8	32.1	29.6	27.0	22.7	18.9	15.4	12.4	10.3
142.5°	44.1	39.4	34.7	30.4	28.3	26.1	21.9	18.4	15.0	12.4	10.3
145°	41.1	36.8	33.0	28.7	26.6	24.8	21.0	17.6	15.0	12.4	10.7
147.5°	38.1	34.7	30.8	27.0	25.3	23.6	20.6	17.6	15.0	12.9	10.7
150°	35.6	32.1	29.1	25.7	24.0	22.7	19.7	17.1	15.0	12.9	11.1
152.5°	33.0	30.0	27.0	24.4	23.1	21.9	19.3	17.1	15.0	12.9	11.1
155°	30.4	27.8	25.7	23.1	22.3	21.0	18.9	16.7	15.0	13.3	11.6
157.5°	28.3	26.1	24.4	22.3	21.4	20.6	18.4	16.7	15.0	13.3	11.6
160°	26.1	24.8	23.1	21.4	20.6	20.1	18.4	16.7	15.0	13.3	12.0
162.5°	24.8	23.6	22.3	20.6	20.1	19.3	18.0	16.3	15.0	13.7	12.4
165°	23.1	22.3	21.0	19.7	19.3	18.4	17.6	16.3	15.0	13.7	12.4
167.5°	21.9	21.0	20.1	18.9	18.4	18.0	17.1	15.9	15.0	13.7	12.9
170°	20.1	19.7	18.9	18.0	17.6	17.1	16.7	15.9	15.0	14.1	13.3
172.5°	18.4	18.0	17.6	17.1	16.7	16.7	15.9	15.4	14.6	14.1	13.3
175°	16.7	16.7	16.3	15.9	15.9	15.9	15.4	15.0	14.6	14.1	13.7
177.5°	15.4	15.4	15.4	15.0	15.0	15.0	15.0	14.6	14.6	14.1	14.1
180°	13.7	13.7	13.7	13.7	13.7	13.7	13.7	13.7	13.7	13.7	13.7



TEST NUMBER: P190099

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

CANDELA DISTRIBUTION (continued):

	100°	105°	110°	112.5°	115°	120°	125°	130°	135°	140°	145°
0°	21.4	21.4	21.4	21.4	21.4	21.4	21.4	21.4	21.4	21.4	21.4
2.5°	21.0	20.6	20.1	20.1	19.7	19.7	19.3	18.9	18.4	18.0	17.6
5°	20.1	19.7	18.9	18.4	18.4	17.6	16.7	16.3	15.9	15.4	14.6
7.5°	19.3	18.4	17.6	17.1	16.7	15.9	14.6	14.1	13.3	12.9	12.0
10°	18.9	17.6	16.3	15.4	15.0	13.7	12.9	12.0	11.1	10.7	9.9
12.5°	18.0	16.3	15.0	14.1	13.7	12.4	11.1	10.3	9.0	8.1	7.3
15°	17.1	15.4	13.7	13.3	12.4	10.7	9.4	8.6	7.3	6.4	5.6
17.5°	16.3	14.6	12.9	12.0	11.1	9.4	8.1	6.9	5.6	4.7	3.9
20°	15.9	13.7	11.6	10.7	9.9	8.1	6.9	5.6	4.3	3.4	3.0
22.5°	15.0	12.9	10.7	9.9	9.0	7.3	5.6	4.3	3.4	2.6	2.1
25°	14.1	12.0	9.9	8.6	7.7	6.0	4.3	3.4	2.6	1.7	1.7
27.5°	13.7	11.1	9.0	7.7	6.9	5.1	3.4	2.6	1.7	1.7	1.7
30°	13.3	10.7	8.1	7.3	6.0	4.3	3.0	2.1	1.7	1.7	1.7
32.5°	12.9	9.9	7.7	6.4	5.6	3.4	2.1	1.7	1.7	1.7	1.7
35°	12.0	9.4	6.9	6.0	4.7	3.0	1.7	1.7	1.7	1.7	1.3
37.5°	12.0	9.0	6.4	5.1	4.3	2.6	1.7	1.7	1.7	1.7	1.3
40°	11.6	8.6	6.0	4.7	3.9	2.1	1.7	1.7	1.3	1.3	1.3
42.5°	11.1	8.1	5.6	4.3	3.0	2.1	1.7	1.7	1.7	1.3	1.3
45°	11.1	8.1	5.1	3.9	2.6	1.7	1.7	1.7	1.3	1.3	1.3
47.5°	10.7	7.3	4.7	3.4	2.1	1.7	1.7	1.7	1.3	1.3	1.3
50°	10.7	7.3	4.3	3.0	2.1	1.7	1.7	1.7	1.3	1.3	1.3
52.5°	10.3	6.9	3.9	2.6	2.1	1.7	1.7	1.7	1.3	1.3	1.3
55°	9.9	6.4	3.4	2.6	2.1	1.7	1.7	1.7	1.3	1.3	0.9
57.5°	9.9	6.0	3.0	2.1	2.1	1.7	1.7	1.7	1.3	1.3	0.9
60°	9.4	6.0	3.0	2.1	2.1	1.7	1.7	1.3	1.3	1.3	0.9
62.5°	9.4	5.6	2.6	2.1	2.1	1.7	1.7	1.7	1.3	1.3	0.9
65°	9.4	5.1	2.6	2.1	2.1	2.1	1.7	1.7	1.3	1.3	0.9
67.5°	9.0	5.1	2.6	2.1	2.1	2.1	1.7	1.7	1.3	1.3	0.9
70°	9.0	4.7	2.6	2.1	2.1	2.1	1.7	1.7	1.3	1.3	0.9
72.5°	8.6	4.7	2.6	2.1	2.1	2.1	1.7	1.7	1.3	1.3	0.9
75°	8.6	4.7	2.6	2.1	2.1	2.1	1.7	1.7	1.3	1.3	0.9
77.5°	8.1	4.3	2.1	2.1	2.1	2.1	1.7	1.7	1.3	1.3	0.9
80°	8.1	4.3	2.6	2.1	2.1	2.1	1.7	1.7	1.3	1.3	0.9
82.5°	8.1	4.3	2.6	2.1	2.1	2.1	1.7	1.7	1.3	1.3	0.9
85°	8.1	4.3	2.6	2.1	2.1	2.1	1.7	1.7	1.3	1.3	0.9
87.5°	7.7	3.9	2.1	2.1	2.1	1.7	1.7	1.3	1.3	0.9	0.9
90°	7.7	3.9	2.1	2.1	2.1	1.7	1.7	1.3	1.3	0.9	0.9
92.5°	7.7	3.9	2.6	2.1	2.1	2.1	1.7	1.3	1.3	0.9	0.9
95°	7.3	3.9	2.1	2.1	2.1	1.7	1.7	1.3	1.3	0.9	0.9
97.5°	7.3	3.9	2.1	2.1	2.1	1.7	1.7	1.3	1.3	0.9	0.9
100°	7.3	3.9	2.1	2.1	2.1	2.1	1.7	1.3	1.3	0.9	0.9
102.5°	7.3	3.9	2.6	2.1	2.1	2.1	1.7	1.7	1.3	0.9	0.9
105°	7.3	3.9	2.6	2.1	2.1	2.1	1.7	1.7	1.3	0.9	0.9
107.5°	7.3	4.3	2.6	2.1	2.1	2.1	1.7	1.7	1.3	0.9	0.9
110°	7.3	4.3	2.6	2.1	2.1	2.1	1.7	1.7	1.3	0.9	0.9



TEST NUMBER: P190099

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

CANDELA DISTRIBUTION (continued):

	100°	105°	110°	112.5°	115°	120°	125°	130°	135°	140°	145°
112.5°	7.3	4.3	2.6	2.1	2.1	2.1	1.7	1.7	1.3	1.3	0.9
115°	7.3	4.7	2.6	2.6	2.1	2.1	2.1	1.7	1.3	1.3	0.9
117.5°	7.3	4.7	3.0	2.6	2.6	2.1	2.1	1.7	1.7	1.3	1.3
120°	7.3	4.7	3.0	2.6	2.6	2.1	2.1	1.7	1.7	1.3	1.3
122.5°	7.3	5.1	3.4	2.6	2.6	2.1	2.1	1.7	1.7	1.7	1.3
125°	7.7	5.1	3.4	2.6	2.6	2.1	2.1	2.1	1.7	1.7	1.3
127.5°	7.7	5.6	3.9	3.0	2.6	2.6	2.1	2.1	1.7	1.7	1.3
130°	7.7	5.6	3.9	3.0	2.6	2.1	2.1	2.1	1.7	1.7	1.7
132.5°	7.7	6.0	4.3	3.4	2.6	2.6	2.1	2.1	2.1	1.7	1.7
135°	7.7	6.0	4.3	3.4	3.0	2.6	2.1	2.1	2.1	1.7	1.7
137.5°	8.1	6.4	4.7	3.9	3.0	2.6	2.1	2.1	2.1	1.7	1.7
140°	8.1	6.4	5.1	4.3	3.4	2.6	2.6	2.1	2.1	2.1	1.7
142.5°	8.6	6.9	5.1	4.7	3.9	3.0	2.6	2.6	2.1	2.1	2.1
145°	8.6	6.9	5.6	4.7	4.3	3.0	2.6	2.6	2.1	2.1	2.1
147.5°	9.0	7.3	6.0	5.1	4.7	3.4	3.0	2.6	2.6	2.1	2.1
150°	9.4	7.7	6.4	5.6	5.1	3.9	3.0	2.6	2.6	2.1	2.1
152.5°	9.4	8.1	6.9	6.0	5.6	4.3	3.4	3.0	2.6	2.6	2.6
155°	9.9	8.6	7.3	6.4	6.0	4.7	3.9	3.4	3.0	2.6	2.6
157.5°	10.3	9.0	7.7	7.3	6.4	5.6	4.7	3.9	3.4	3.0	2.6
160°	10.7	9.4	8.1	7.7	7.3	6.4	5.6	4.7	3.9	3.4	3.0
162.5°	11.1	9.9	9.0	8.1	7.7	6.9	6.0	5.6	4.7	4.3	3.9
165°	11.6	10.3	9.4	9.0	8.6	7.7	6.9	6.4	5.6	5.1	4.7
167.5°	12.0	11.1	10.3	9.9	9.4	8.6	8.1	7.3	6.9	6.0	6.0
170°	12.4	11.6	11.1	10.7	10.3	9.4	9.0	8.6	7.7	7.3	6.9
172.5°	12.9	12.4	11.6	11.6	11.1	10.7	9.9	9.4	9.0	8.6	8.6
175°	13.3	12.9	12.4	12.4	12.0	11.6	11.1	10.7	10.7	10.3	9.9
177.5°	13.7	13.7	13.3	13.3	13.3	12.9	12.9	12.4	12.4	12.0	12.0
180°	13.7	13.7	13.7	13.7	13.7	13.7	13.7	13.7	13.7	13.7	13.7



TEST NUMBER: P190099

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

CANDELA DISTRIBUTION (continued):

	150°	155°	157.5°	160°	165°	170°	175°	180°
0°	21.4	21.4	21.4	21.4	21.4	21.4	21.4	21.4
2.5°	17.6	17.1	17.1	17.1	17.1	16.7	16.7	16.3
5°	14.1	14.1	14.1	13.7	13.3	13.3	13.3	13.3
7.5°	11.6	11.1	11.1	10.7	10.7	10.3	10.3	9.9
10°	9.0	8.6	8.6	8.1	7.7	7.7	7.7	7.3
12.5°	6.9	6.4	6.0	6.0	5.6	5.1	5.1	5.1
15°	4.7	4.3	4.3	3.9	3.9	3.4	3.4	3.4
17.5°	3.4	3.0	2.6	2.6	2.1	2.1	2.1	2.1
20°	2.1	2.1	1.7	1.7	1.7	1.7	1.7	1.7
22.5°	1.7	1.7	1.7	1.7	1.7	1.7	1.3	1.3
25°	1.7	1.7	1.7	1.3	1.3	1.3	1.3	1.3
27.5°	1.7	1.3	1.3	1.3	1.3	1.3	1.3	1.3
30°	1.7	1.3	1.3	1.3	1.3	1.3	1.3	1.3
32.5°	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
35°	1.3	1.3	1.3	1.3	1.3	0.9	0.9	0.9
37.5°	1.3	1.3	1.3	1.3	0.9	0.9	0.9	0.9
40°	1.3	0.9	0.9	0.9	0.9	0.9	0.9	0.9
42.5°	1.3	0.9	0.9	0.9	0.9	0.9	0.4	0.4
45°	1.3	0.9	0.9	0.9	0.9	0.4	0.4	0.4
47.5°	0.9	0.9	0.9	0.9	0.4	0.4	0.4	0.4
50°	0.9	0.9	0.9	0.9	0.4	0.4	0.4	0.4
52.5°	0.9	0.9	0.9	0.9	0.4	0.4	0.4	0.4
55°	0.9	0.9	0.9	0.4	0.4	0.4	0.4	0.4
57.5°	0.9	0.9	0.4	0.4	0.4	0.4	0.4	0.4
60°	0.9	0.9	0.4	0.4	0.4	0.4	0.4	0.4
62.5°	0.9	0.4	0.4	0.4	0.4	0.4	0.4	0.4
65°	0.9	0.9	0.4	0.4	0.4	0.4	0.4	0.4
67.5°	0.9	0.4	0.4	0.4	0.4	0.4	0.4	0.4
70°	0.9	0.4	0.4	0.4	0.4	0.4	0.4	0.4
72.5°	0.9	0.4	0.4	0.4	0.4	0.4	0.4	0.4
75°	0.9	0.4	0.4	0.4	0.4	0.4	0.4	0.4
77.5°	0.9	0.4	0.4	0.4	0.4	0.4	0.4	0.4
80°	0.9	0.4	0.4	0.4	0.4	0.4	0.4	0.4
82.5°	0.9	0.4	0.4	0.4	0.4	0.4	0.4	0.4
85°	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
87.5°	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
90°	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
92.5°	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
95°	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
97.5°	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
100°	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
102.5°	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
105°	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
107.5°	0.9	0.4	0.4	0.4	0.4	0.4	0.4	0.4
110°	0.4	0.4	0.4	0.4	0.4	0.0	0.0	0.0



TEST NUMBER: P190099

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

CANDELA DISTRIBUTION (continued):

	150°	155°	157.5°	160°	165°	170°	175°	180°
112.5°	0.9	0.4	0.4	0.4	0.4	0.4	0.4	0.4
115°	0.9	0.9	0.4	0.4	0.4	0.4	0.4	0.4
117.5°	0.9	0.9	0.9	0.9	0.4	0.4	0.4	0.4
120°	1.3	0.9	0.9	0.9	0.4	0.4	0.4	0.4
122.5°	1.3	0.9	0.9	0.9	0.9	0.4	0.4	0.4
125°	1.3	0.9	0.9	0.9	0.9	0.9	0.9	0.9
127.5°	1.3	1.3	1.3	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	1.3	0.9	0.9	0.9
135°	1.7	1.3	1.3	1.3	1.3	1.3	0.9	0.9
137.5°	1.7	1.3	1.3	1.3	1.3	1.3	1.3	1.3
140°	1.7	1.7	1.7	1.7	1.3	1.3	1.3	1.3
142.5°	1.7	1.7	1.7	1.7	1.7	1.3	1.3	1.3
145°	2.1	1.7	1.7	1.7	1.7	1.7	1.7	1.7
147.5°	2.1	1.7	1.7	1.7	1.7	1.7	1.7	1.7
150°	2.1	2.1	2.1	2.1	1.7	1.7	1.7	1.7
152.5°	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1
155°	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1
157.5°	2.6	2.1	2.1	2.1	2.1	2.1	2.1	2.1
160°	3.0	2.6	2.6	2.6	2.1	2.1	2.1	2.1
162.5°	3.4	3.0	3.0	3.0	2.6	2.6	2.6	2.6
165°	4.3	3.9	3.9	3.9	3.4	3.4	3.4	3.4
167.5°	5.1	5.1	5.1	4.7	4.7	4.3	4.3	4.3
170°	6.9	6.4	6.4	6.0	6.0	5.6	5.6	5.6
172.5°	8.1	7.7	7.7	7.7	7.3	7.3	7.3	7.3
175°	9.9	9.4	9.4	9.4	9.0	9.0	9.0	9.0
177.5°	11.6	11.6	11.6	11.6	11.6	11.1	11.6	11.1
180°	13.7	13.7	13.7	13.7	13.7	13.7	13.7	13.7

(END OF REPORT)