

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: P190102

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

Issue Date: 3/3/2020



**Test Information**

Test Method: LM-79-08  
Report Number: P190102  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (P27863)  
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-CL-BK-UNV-EDC1  
Description: TERRAPIN 11" LED WALL MOUNT WITH OPEN CLEAR LENS AND QUAD LENS COVER  
Light Source: (56) NICHIA 5000  
NF2L757DRT  
Ballast/Driver: OSRAM ELECTRONIC DRIVER PROGRAMMED AT 200mA  
OT25W/1

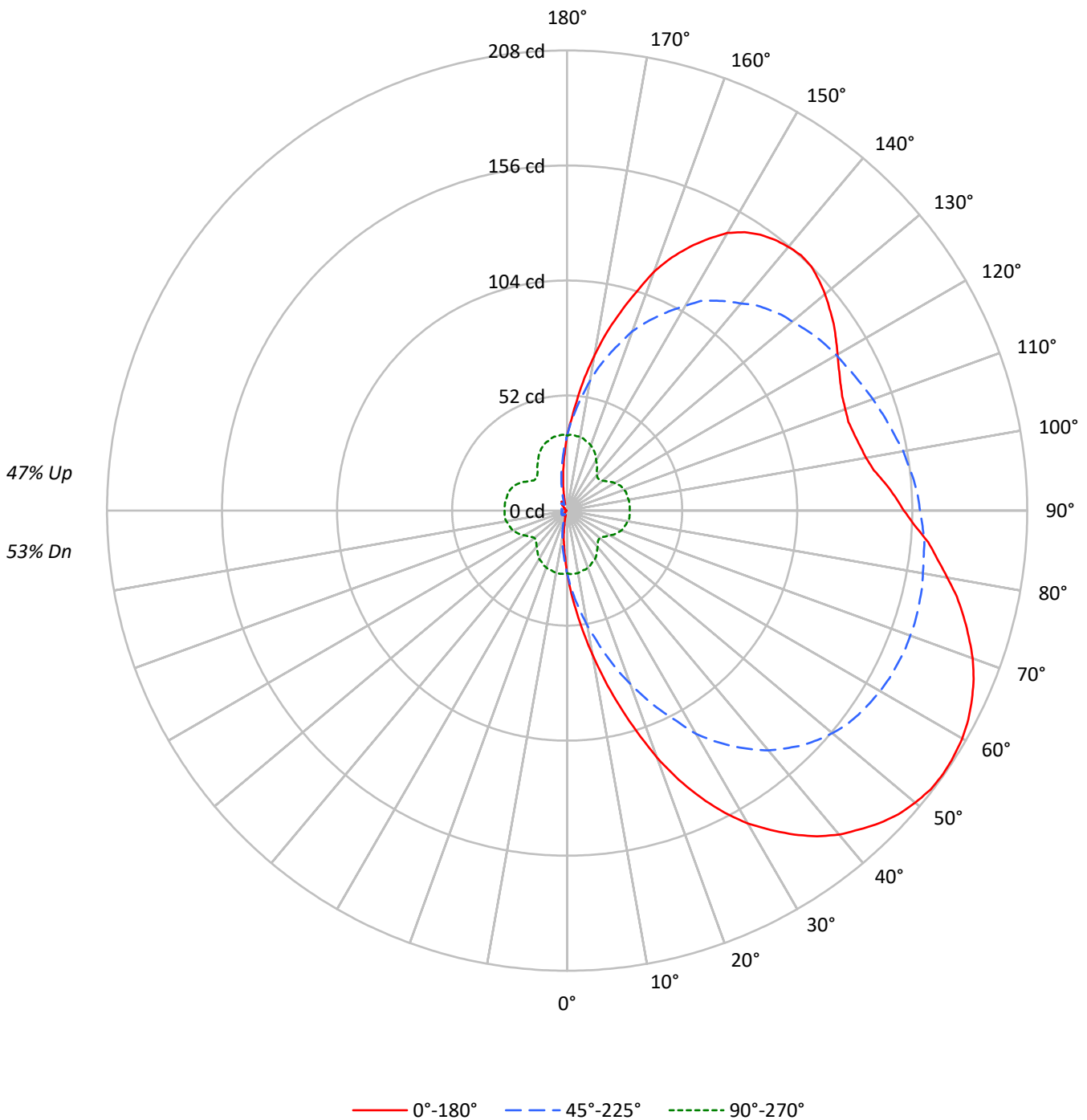
**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 785.0 lumens  
Efficiency: N/A  
Efficacy: 78.5 lumens/watt  
Spacing Criteria (0/90/45): 3.33 / 1.31 / 2.89  
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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CATALOG NUMBER: TRF11-LD4-10W-50-CL-BK-UNV-EDC1

### 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	71	71	71	59	59	59	53
1	94	87	81	76	86	80	75	70	67	63	60	55	52	49	44	42	40	35
2	83	73	65	58	76	67	60	54	56	50	45	46	41	38	36	33	30	25
3	75	63	53	46	68	58	49	43	48	41	36	39	34	30	30	27	23	19
4	68	54	45	38	61	50	41	35	41	35	29	34	28	24	26	22	19	15
5	62	48	38	31	56	44	35	29	36	30	24	29	24	20	23	19	15	12
6	56	42	33	26	51	39	30	24	32	26	20	26	21	17	20	16	13	10
7	52	38	29	23	47	35	27	21	29	22	17	24	18	14	18	14	11	8
8	48	34	25	19	44	31	23	18	26	20	15	21	16	12	17	13	10	7
9	44	31	23	17	41	28	21	16	24	18	13	19	14	11	15	11	8	6
10	41	28	20	15	38	26	19	14	22	16	12	18	13	9	14	10	7	5

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

	0°	90°	180°
0°	1139	1139	1139
5°	1414	1067	504
10°	1736	997	203
15°	2066	917	77
20°	2374	861	42
25°	2580	794	38
30°	2697	746	43
35°	2746	671	40
40°	2763	612	30
45°	2746	561	23
50°	2711	552	17
55°	2654	595	12
60°	2577	657	5
65°	2485	739	5
70°	2384	823	11
75°	2268	888	11
80°	2149	970	11
85°	2049	1052	5



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	2.9	0.4
10°-20°	10.9	1.4
20°-30°	23.4	3.0
30°-40°	38.4	4.9
40°-50°	52.5	6.7
50°-60°	64.3	8.2
60°-70°	72.4	9.2
70°-80°	76.2	9.7
80°-90°	75.5	9.6
90°-100°	71.7	9.1
100°-110°	66.3	8.4
110°-120°	60.2	7.7
120°-130°	53.2	6.8
130°-140°	44.7	5.7
140°-150°	34.5	4.4
150°-160°	22.9	2.9
160°-170°	11.7	1.5
170°-180°	3.4	0.4
0°-30°	37.2	4.7
0°-40°	75.6	9.6
0°-60°	192.4	24.5
0°-90°	416.5	53.1
90°-120°	198.2	25.2
90°-150°	330.6	42.1
90°-180°	369.0	47.0
0°-180°	785.0	100.0

**CANDELA DISTRIBUTION:**

	0°	45°	90°	135°	180°	Flux
0°	28	28	28	28	28	
5°	45	40	29	19	16	5
15°	91	67	28	7	3	27
25°	143	100	26	3	2	67
35°	179	130	23	2	3	112
45°	200	150	20	3	2	154
55°	208	161	21	3	1	186
65°	202	165	24	3	0	200
75°	186	165	27	3	1	196
85°	164	162	28	2	0	136
90°	152	160	28	2	0	84
95°	144	157	28	2	0	116
105°	134	150	28	3	0	142
115°	136	144	27	3	0	136
125°	147	137	23	4	1	132
135°	156	129	20	4	2	120
145°	152	116	24	4	4	95
155°	132	97	29	3	4	61
165°	93	73	33	9	4	27
175°	50	46	34	23	19	5
180°	34	34	34	34	34	



TEST NUMBER: P190102

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

**CANDELA DISTRIBUTION (FULL):**

	0°	5°	10°	15°	20°	22.5°	25°	30°	35°	40°	45°
0°	28.3	28.3	28.3	28.3	28.3	28.3	28.3	28.3	28.3	28.3	28.3
2.5°	36.0	35.6	35.2	35.2	35.2	35.2	34.7	35.2	34.7	34.3	33.9
5°	44.6	44.6	44.2	44.2	43.7	43.3	42.9	42.4	41.6	40.7	39.9
7.5°	54.9	54.4	54.0	53.6	52.7	52.3	51.4	50.6	49.3	47.6	45.9
10°	66.0	65.2	64.7	63.9	62.6	61.7	60.9	59.2	57.0	54.9	52.7
12.5°	78.5	77.2	76.3	75.5	73.7	72.5	71.2	69.0	66.5	63.0	59.6
15°	91.3	90.5	89.2	87.9	86.2	84.5	83.2	80.2	76.3	72.0	67.3
17.5°	104.6	104.2	102.5	100.8	98.2	96.5	94.7	90.9	86.2	80.6	75.5
20°	118.8	118.3	116.6	114.5	111.0	108.9	105.9	101.6	96.0	89.6	83.2
22.5°	131.6	130.3	129.0	126.5	123.0	120.5	118.3	113.2	105.9	98.6	91.3
25°	143.2	142.3	140.6	138.1	134.6	131.6	129.5	123.9	117.0	108.5	99.5
27.5°	153.9	153.1	151.8	148.8	144.5	142.3	139.8	133.8	126.0	117.9	107.2
30°	163.3	162.9	161.2	158.2	154.3	151.3	149.2	143.2	135.5	126.5	116.6
32.5°	171.1	170.6	169.3	166.3	162.1	159.9	156.9	150.9	142.8	133.8	123.5
35°	178.8	178.4	176.6	173.2	169.3	166.8	164.2	157.8	150.1	140.6	129.9
37.5°	185.6	185.2	182.6	180.1	175.8	173.6	170.6	163.8	156.1	147.1	135.9
40°	191.2	190.4	188.6	185.6	181.4	179.2	176.2	169.8	162.1	152.2	141.5
42.5°	195.5	195.5	193.4	190.4	186.5	183.9	181.4	174.5	166.3	156.9	145.8
45°	199.8	199.4	197.2	194.6	190.4	188.2	185.2	178.8	171.1	161.2	150.1
47.5°	203.2	202.4	200.6	197.6	193.8	191.2	188.6	182.2	174.5	165.1	153.5
50°	205.4	204.9	202.8	199.8	196.4	193.8	190.8	184.8	177.1	167.6	156.5
52.5°	207.1	206.2	204.5	201.9	198.1	195.9	192.9	186.9	179.2	169.8	159.1
55°	207.5	206.6	205.4	202.8	198.9	196.8	194.2	187.8	180.5	171.5	160.8
57.5°	207.1	206.6	204.9	202.4	198.5	196.4	194.2	188.2	181.4	172.8	162.1
60°	206.2	205.8	203.6	201.1	198.1	195.9	193.8	188.2	181.4	173.2	163.3
62.5°	204.5	204.1	202.4	199.4	196.4	194.6	192.1	187.4	180.9	173.6	164.2
65°	201.9	201.5	199.8	197.2	194.6	192.5	190.8	186.1	180.5	173.2	164.6
67.5°	198.9	198.5	196.8	194.6	192.1	190.4	188.6	184.4	179.6	173.2	165.1
70°	195.1	194.6	192.9	190.8	188.6	187.4	185.6	181.8	177.9	172.3	165.1
72.5°	190.4	190.4	188.6	186.9	185.2	183.5	182.2	179.2	176.2	171.1	165.1
75°	185.6	185.2	184.4	182.6	180.9	179.6	178.8	176.6	173.6	170.2	164.6
77.5°	180.5	180.1	178.8	177.9	176.6	175.8	175.4	173.6	171.5	168.5	164.2
80°	174.5	174.5	173.6	172.8	171.9	171.5	171.1	170.2	169.3	167.2	163.3
82.5°	168.9	168.9	168.1	167.6	167.2	167.2	167.2	166.8	166.8	165.5	162.5
85°	163.8	163.3	162.9	162.5	162.5	162.9	162.9	163.8	164.2	164.2	162.1
87.5°	157.3	157.8	157.3	157.3	157.8	158.6	159.1	160.3	161.2	162.1	160.8
90°	152.2	152.2	152.2	152.6	153.5	154.3	155.2	156.9	158.6	159.9	159.5
92.5°	148.3	148.3	148.3	148.8	150.1	151.3	152.2	154.8	156.9	158.6	158.6
95°	144.1	144.1	144.5	144.9	146.6	147.9	149.2	152.2	154.3	156.9	157.3
97.5°	139.8	140.2	140.6	141.5	143.6	144.9	146.2	149.6	152.2	154.8	155.6
100°	137.2	137.2	137.6	139.3	141.1	142.3	144.1	147.5	150.5	153.1	154.3
102.5°	135.5	135.5	135.9	137.2	139.3	140.6	141.9	145.8	148.8	151.3	152.2
105°	134.2	134.2	134.6	135.9	138.1	139.3	141.1	144.5	147.5	149.6	150.5
107.5°	133.3	133.8	134.2	135.5	137.6	138.9	140.6	143.2	146.2	148.3	148.8
110°	133.8	134.2	134.6	135.9	138.1	139.3	140.6	143.2	145.8	147.5	147.1



TEST NUMBER: P190102

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

**CANDELA DISTRIBUTION (continued):**

	0°	5°	10°	15°	20°	22.5°	25°	30°	35°	40°	45°
112.5°	134.6	135.0	135.5	136.8	138.5	139.8	141.1	143.2	145.3	146.2	145.3
115°	136.3	136.8	137.2	138.5	140.2	141.1	141.9	143.6	144.9	145.3	143.6
117.5°	138.5	138.9	139.3	140.6	141.9	142.3	143.2	144.5	145.3	144.5	141.9
120°	141.1	141.1	141.5	142.8	143.6	144.5	144.9	145.3	145.3	143.6	140.6
122.5°	144.1	144.1	144.5	144.9	145.8	145.8	146.2	145.8	144.9	142.8	138.9
125°	147.1	147.1	147.1	147.5	147.5	147.5	147.5	146.6	145.3	141.9	137.2
127.5°	149.6	149.6	149.6	149.6	149.2	149.2	148.8	147.1	144.9	140.6	135.0
130°	152.2	152.2	151.8	151.3	150.5	150.1	149.2	147.5	144.1	139.8	132.9
132.5°	154.3	154.3	153.5	152.6	151.8	150.9	150.1	147.5	143.2	138.1	131.2
135°	156.1	155.6	154.8	153.9	152.2	151.3	150.1	146.6	142.3	136.3	128.6
137.5°	156.5	156.5	155.2	154.3	152.2	150.9	149.6	145.8	140.6	134.2	126.0
140°	155.6	155.2	154.3	153.1	150.5	149.2	147.5	143.2	137.6	130.8	122.2
142.5°	154.3	153.9	153.1	151.3	148.8	147.1	144.9	140.6	134.6	127.8	119.2
145°	152.2	151.8	150.5	148.8	146.2	144.5	142.3	137.6	131.6	123.9	115.8
147.5°	149.2	148.8	147.5	145.8	142.8	140.6	138.5	133.8	127.8	120.5	112.3
150°	144.9	144.1	142.8	140.6	138.1	135.9	133.8	129.0	122.6	115.8	106.8
152.5°	138.5	138.1	136.8	134.6	132.0	129.9	127.8	123.0	117.0	109.8	102.0
155°	131.6	130.8	129.9	127.8	125.2	123.0	120.9	116.6	111.0	103.8	96.9
157.5°	123.9	123.0	122.2	120.0	117.9	115.8	114.0	109.3	103.8	98.2	91.7
160°	114.9	114.0	113.2	111.0	108.0	106.8	104.6	101.2	96.5	91.3	86.2
162.5°	103.3	102.9	102.0	100.3	98.6	97.3	95.6	92.2	88.3	84.5	79.3
165°	92.6	92.2	91.7	90.0	88.7	87.9	86.2	83.6	80.2	76.7	72.9
167.5°	82.3	81.9	81.5	80.2	79.3	78.0	76.7	75.0	72.0	69.5	66.5
170°	71.2	71.2	70.7	69.9	69.0	68.6	67.3	66.0	63.9	61.7	59.6
172.5°	60.5	60.0	60.0	59.2	59.2	58.7	57.9	57.0	55.3	54.0	52.3
175°	49.7	49.7	49.7	49.3	49.3	49.3	48.4	48.0	47.2	46.7	45.9
177.5°	40.7	40.3	40.7	40.7	40.7	40.7	40.3	40.3	40.3	39.9	39.9
180°	33.9	33.9	33.9	33.9	33.9	33.9	33.9	33.9	33.9	33.9	33.9



TEST NUMBER: P190102

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**CANDELA DISTRIBUTION (continued):**

	50°	55°	60°	65°	67.5°	70°	75°	80°	85°	90°	95°
0°	28.3	28.3	28.3	28.3	28.3	28.3	28.3	28.3	28.3	28.3	28.3
2.5°	33.4	33.0	32.6	32.2	31.7	31.3	30.9	30.0	29.6	28.7	28.3
5°	39.0	37.7	36.4	35.2	34.7	33.9	33.0	31.3	30.0	28.7	27.4
7.5°	44.2	42.4	40.7	38.6	37.7	36.4	34.7	32.6	30.9	28.7	27.0
10°	50.2	47.2	44.6	42.0	40.3	39.0	36.4	33.9	30.9	28.7	26.2
12.5°	56.2	52.7	48.9	45.4	43.7	41.6	38.2	34.7	31.3	28.3	25.3
15°	63.0	58.3	53.6	48.9	46.7	44.2	39.9	35.6	31.7	27.9	24.4
17.5°	69.9	63.9	58.3	52.7	49.7	46.7	41.6	36.9	32.2	27.9	24.0
20°	76.7	69.9	62.6	55.7	52.7	49.3	43.3	37.3	32.2	27.4	23.2
22.5°	83.6	75.5	67.3	59.2	55.3	51.4	44.6	38.2	32.2	27.0	22.3
25°	90.5	81.0	71.6	62.6	58.3	54.0	45.9	38.6	32.2	26.2	21.4
27.5°	97.3	87.0	76.3	65.6	60.9	56.2	47.2	39.0	32.2	25.7	20.6
30°	104.2	92.6	80.6	69.0	63.5	57.9	48.0	39.4	31.7	25.3	19.7
32.5°	111.0	97.8	84.5	72.0	65.6	59.6	48.9	39.4	31.3	24.4	18.4
35°	117.5	102.9	88.7	74.6	67.7	61.3	49.3	39.0	30.4	23.2	17.6
37.5°	123.0	108.5	92.6	77.2	69.9	62.6	49.7	38.6	29.6	22.3	16.7
40°	128.2	113.6	96.0	79.7	71.6	63.9	50.2	38.2	28.7	21.4	15.4
42.5°	132.5	117.5	99.5	82.3	73.7	65.2	50.2	37.7	27.9	20.6	14.6
45°	136.3	121.3	102.9	84.5	75.5	66.9	50.6	37.7	27.4	19.7	14.1
47.5°	140.2	124.8	105.9	87.0	77.6	68.6	51.4	37.7	27.4	19.3	13.7
50°	143.2	127.8	109.3	89.6	79.7	70.3	52.7	38.2	27.4	19.3	13.7
52.5°	145.8	130.3	112.8	92.2	82.3	72.0	54.0	39.4	27.9	19.7	14.1
55°	147.9	132.9	115.3	94.7	84.9	74.6	55.7	40.7	29.2	20.6	14.1
57.5°	149.6	135.0	117.9	97.3	87.0	77.2	57.9	42.4	30.4	21.4	14.6
60°	151.3	137.2	120.5	99.9	89.6	79.7	60.5	44.6	32.2	22.3	15.0
62.5°	152.6	138.9	122.6	102.5	92.6	82.3	62.6	46.3	33.4	23.6	15.4
65°	153.9	140.6	125.2	105.5	95.2	85.3	65.6	48.9	35.2	24.4	15.9
67.5°	154.8	142.3	127.3	108.9	98.2	87.9	68.2	51.0	36.9	25.3	16.3
70°	155.6	144.1	129.5	111.9	101.2	90.9	70.7	53.2	38.2	26.2	16.3
72.5°	156.5	145.8	131.6	114.5	103.8	93.5	73.3	54.9	39.4	26.6	16.7
75°	156.9	146.6	133.3	117.0	106.3	96.0	75.5	56.6	40.3	27.0	16.7
77.5°	157.3	147.9	135.0	119.2	108.5	98.6	77.6	58.3	41.6	27.4	16.7
80°	157.8	148.8	136.8	120.9	111.5	100.3	79.3	59.6	42.0	27.9	16.7
82.5°	157.8	149.6	138.1	122.6	113.2	102.0	81.0	60.5	42.9	28.3	16.7
85°	157.8	150.5	139.3	123.9	114.9	103.8	81.9	61.3	43.3	28.3	16.7
87.5°	157.3	150.5	140.2	125.2	115.8	104.6	83.2	62.2	43.7	28.3	16.3
90°	156.5	150.5	140.6	125.6	116.6	105.5	83.6	62.6	43.7	28.3	16.3
92.5°	156.5	150.1	140.2	125.6	116.2	105.0	83.6	62.2	43.7	28.3	16.3
95°	155.2	149.2	139.3	125.2	115.8	105.0	83.6	62.2	43.7	28.3	16.3
97.5°	153.5	147.9	138.1	123.9	114.9	104.2	83.2	62.2	43.7	28.3	16.3
100°	152.2	146.6	137.2	123.0	114.0	103.3	82.7	61.7	43.3	28.3	16.3
102.5°	150.5	144.9	135.0	121.3	112.3	102.0	81.5	61.3	43.3	27.9	16.3
105°	148.8	142.3	132.9	119.2	109.8	100.3	80.2	60.5	42.4	27.9	16.7
107.5°	146.6	140.2	130.3	116.6	107.2	98.2	78.5	59.2	42.0	27.9	16.7
110°	144.1	137.6	127.8	114.0	104.6	95.6	76.7	57.9	41.2	27.4	16.7





TEST NUMBER: P190102

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

**CANDELA DISTRIBUTION (continued):**

	50°	55°	60°	65°	67.5°	70°	75°	80°	85°	90°	95°
112.5°	141.5	134.6	124.8	110.2	101.6	92.6	74.2	56.2	40.3	27.0	16.7
115°	139.3	131.6	121.3	106.3	98.2	89.6	71.6	54.4	39.0	26.6	16.7
117.5°	137.2	129.0	117.9	102.9	94.7	86.2	68.6	52.3	37.7	25.7	16.3
120°	135.0	126.0	114.9	99.5	90.9	82.7	65.6	49.7	36.0	24.9	16.3
122.5°	132.0	123.0	110.6	96.0	87.5	79.3	62.6	47.2	34.3	24.0	15.9
125°	129.9	119.6	106.8	92.2	84.0	75.9	59.6	45.0	32.6	22.7	15.4
127.5°	126.9	116.6	103.3	88.3	80.2	72.5	56.6	42.4	30.9	21.9	15.0
130°	124.8	113.6	99.9	84.9	77.2	69.0	54.0	40.3	29.6	21.0	14.6
132.5°	121.8	109.8	96.5	81.9	74.2	66.5	51.9	38.6	28.3	20.2	14.1
135°	119.2	106.3	93.5	78.9	71.2	64.3	50.2	37.7	27.4	20.2	14.1
137.5°	116.2	103.3	90.5	76.7	69.0	62.2	48.9	36.9	27.4	20.2	14.6
140°	112.8	99.9	87.5	74.2	67.3	60.5	48.0	36.9	27.9	21.0	15.4
142.5°	108.5	96.9	84.9	72.5	65.6	59.6	47.6	37.3	28.7	21.9	16.3
145°	105.0	94.3	82.7	70.7	64.7	59.2	48.0	38.2	30.0	23.6	18.0
147.5°	102.0	91.7	80.6	69.5	63.9	58.7	48.4	39.0	31.3	24.9	19.3
150°	98.2	88.3	78.5	68.2	63.0	58.3	48.9	40.3	32.6	26.2	20.6
152.5°	93.9	84.9	75.9	66.9	62.2	57.4	48.9	41.2	33.9	27.9	22.3
155°	89.6	81.5	73.3	64.7	60.9	56.6	48.9	41.6	35.2	29.2	23.6
157.5°	84.9	78.0	70.3	63.0	59.2	55.7	48.9	42.0	36.0	30.4	24.9
160°	79.7	73.7	67.3	60.9	57.4	54.4	48.0	42.0	36.4	31.3	26.2
162.5°	74.6	69.0	63.5	57.9	54.9	52.3	47.2	41.6	36.9	32.2	27.4
165°	68.6	63.9	59.6	54.9	52.3	50.2	45.9	41.2	36.9	32.6	28.7
167.5°	63.0	59.6	55.7	51.9	49.7	48.0	44.2	40.3	36.9	33.4	30.0
170°	57.0	54.0	51.4	48.4	46.7	45.4	42.4	39.4	36.4	33.9	30.9
172.5°	50.6	48.4	46.7	44.6	43.7	42.4	40.3	38.2	36.0	33.9	31.7
175°	44.6	43.3	42.4	41.2	40.3	39.9	38.6	36.9	35.6	34.3	33.0
177.5°	39.0	38.6	38.2	37.7	37.3	36.9	36.4	35.6	35.2	34.3	33.9
180°	33.9	33.9	33.9	33.9	33.9	33.9	33.9	33.9	33.9	33.9	33.9



TEST NUMBER: P190102

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

**CANDELA DISTRIBUTION (continued):**

	100°	105°	110°	112.5°	115°	120°	125°	130°	135°	140°	145°
0°	28.3	28.3	28.3	28.3	28.3	28.3	28.3	28.3	28.3	28.3	28.3
2.5°	27.4	27.0	26.2	25.7	25.7	24.9	24.4	24.0	23.2	22.7	22.3
5°	26.6	25.3	24.0	23.6	22.7	21.9	21.0	20.2	19.3	18.4	17.6
7.5°	25.3	23.6	21.9	21.0	20.6	18.9	18.0	16.7	15.4	14.6	14.1
10°	24.0	21.9	19.7	18.9	18.0	16.3	15.0	13.7	12.4	11.6	10.3
12.5°	22.7	20.2	18.0	16.7	15.9	14.1	12.4	11.1	9.9	8.6	7.7
15°	21.4	18.9	16.3	15.0	13.7	12.0	10.3	8.6	7.3	6.4	5.6
17.5°	20.2	17.1	14.6	13.3	12.0	10.3	8.1	6.9	5.6	4.7	3.9
20°	19.3	15.9	12.9	11.6	10.7	8.6	6.4	5.1	4.3	3.4	3.0
22.5°	18.0	14.6	11.6	10.3	9.0	6.9	5.1	3.9	3.0	2.6	2.1
25°	17.1	13.3	10.3	9.0	7.7	5.6	4.3	3.0	2.6	2.1	2.1
27.5°	15.9	12.4	9.0	7.7	6.4	4.7	3.4	2.6	2.1	2.1	2.1
30°	15.0	11.1	8.1	6.9	5.6	3.9	2.6	2.1	2.1	2.1	2.1
32.5°	14.1	10.3	7.3	6.0	5.1	3.4	2.1	2.1	2.1	2.1	2.6
35°	12.9	9.4	6.4	5.1	4.3	3.0	2.1	2.1	2.1	2.1	2.6
37.5°	12.0	8.6	6.0	4.7	3.9	2.1	2.1	2.1	2.1	2.1	2.6
40°	11.1	8.1	5.6	4.3	3.4	2.1	2.1	2.1	2.1	2.6	2.6
42.5°	10.7	7.7	5.1	3.9	3.0	2.1	2.1	2.1	2.6	2.6	2.6
45°	10.3	7.3	4.7	3.4	2.6	2.1	2.1	2.1	2.6	2.6	2.6
47.5°	9.9	6.9	4.3	3.0	2.1	2.1	2.6	2.6	3.0	3.0	2.6
50°	9.9	6.4	3.9	3.0	2.1	2.1	2.6	3.0	3.0	3.0	2.6
52.5°	9.9	6.4	3.4	2.6	2.1	2.6	2.6	3.0	3.0	2.6	2.6
55°	9.9	6.0	3.4	2.6	2.1	2.6	3.0	3.0	3.0	2.6	2.1
57.5°	9.9	5.6	3.0	2.6	2.1	2.6	3.0	3.0	3.0	2.6	2.1
60°	9.4	5.1	3.0	2.1	2.6	3.0	3.0	3.0	3.0	2.6	2.1
62.5°	9.4	5.1	2.6	2.6	2.6	3.0	3.0	3.0	2.6	2.6	1.7
65°	9.4	4.7	2.6	2.6	2.6	3.0	3.4	3.0	2.6	2.1	1.7
67.5°	9.4	4.7	2.6	2.6	2.6	3.0	3.4	3.0	2.6	2.1	1.7
70°	9.4	4.3	2.6	2.6	3.0	3.0	3.4	3.0	2.6	2.1	1.7
72.5°	9.0	4.3	2.6	2.6	3.0	3.4	3.4	3.0	2.6	2.1	1.7
75°	9.0	4.3	2.6	2.6	3.0	3.4	3.4	3.0	2.6	2.1	1.3
77.5°	8.6	3.9	2.6	2.6	3.0	3.4	3.4	3.0	2.6	1.7	1.3
80°	8.6	3.9	2.6	2.6	3.0	3.4	3.4	3.0	2.6	1.7	1.3
82.5°	8.6	3.9	2.6	3.0	3.0	3.4	3.4	3.0	2.1	1.7	1.3
85°	8.6	3.9	2.6	2.6	3.0	3.4	3.4	3.0	2.1	1.7	1.3
87.5°	8.1	3.9	2.6	2.6	3.0	3.4	3.4	2.6	2.1	1.7	1.3
90°	8.1	3.4	2.6	2.6	3.0	3.4	3.4	2.6	2.1	1.3	0.9
92.5°	8.1	3.9	2.6	3.0	3.0	3.4	3.4	3.0	2.1	1.7	1.3
95°	8.6	3.9	2.6	3.0	3.0	3.4	3.4	3.0	2.1	1.7	1.3
97.5°	8.6	3.9	2.6	3.0	3.0	3.4	3.4	3.0	2.1	1.7	1.3
100°	8.6	3.9	2.6	3.0	3.4	3.4	3.4	3.0	2.6	1.7	1.3
102.5°	8.6	3.9	2.6	3.0	3.0	3.4	3.4	3.0	2.6	1.7	1.3
105°	8.6	4.3	2.6	3.0	3.0	3.4	3.4	3.0	2.6	1.7	1.3
107.5°	9.0	4.3	2.6	2.6	3.0	3.4	3.9	3.4	2.6	1.7	1.3
110°	9.0	4.3	2.6	2.6	3.0	3.4	3.9	3.4	2.6	2.1	1.7



TEST NUMBER: P190102

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

**CANDELA DISTRIBUTION (continued):**

	100°	105°	110°	112.5°	115°	120°	125°	130°	135°	140°	145°
112.5°	9.4	4.7	2.6	2.6	3.0	3.4	3.9	3.4	3.0	2.1	1.7
115°	9.4	4.7	3.0	3.0	3.0	3.4	3.9	3.9	3.0	2.6	1.7
117.5°	9.9	5.1	3.0	3.0	3.0	3.9	3.9	3.9	3.4	2.6	2.1
120°	9.9	5.6	3.0	3.0	3.0	3.9	3.9	3.9	3.4	3.0	2.1
122.5°	9.9	5.6	3.4	3.0	3.0	3.4	3.9	4.3	3.9	3.0	2.6
125°	9.9	6.0	3.4	3.0	3.0	3.4	3.9	4.3	3.9	3.4	3.0
127.5°	9.9	6.4	3.9	3.0	3.0	3.4	3.9	4.3	4.3	3.9	3.0
130°	9.9	6.9	4.3	3.4	3.0	3.4	3.9	4.3	4.3	3.9	3.4
132.5°	9.9	6.9	4.7	3.4	3.0	3.0	3.4	4.3	4.3	4.3	3.9
135°	10.3	7.3	5.1	3.9	3.0	3.0	3.4	3.9	4.3	4.3	4.3
137.5°	10.7	7.7	5.1	4.3	3.4	3.0	3.4	3.9	4.3	4.3	4.3
140°	11.6	8.1	5.6	4.7	3.9	3.0	3.0	3.4	3.9	4.3	4.3
142.5°	12.4	9.0	6.4	5.1	4.3	3.0	3.0	3.4	3.9	4.3	4.7
145°	13.3	9.9	6.9	6.0	4.7	3.4	3.0	3.4	3.9	4.3	4.3
147.5°	14.6	11.1	7.7	6.4	5.6	3.9	3.0	3.0	3.4	3.9	4.3
150°	15.9	12.4	9.0	7.3	6.4	4.3	3.4	3.0	3.0	3.4	3.9
152.5°	17.6	13.7	10.3	8.6	7.3	5.1	3.9	3.0	3.0	3.0	3.4
155°	18.9	15.0	11.6	9.9	8.6	6.4	4.7	3.9	3.0	3.0	3.0
157.5°	20.6	16.7	13.3	11.6	10.3	7.7	6.0	4.7	3.9	3.4	3.0
160°	21.9	18.0	15.0	13.3	12.0	9.4	7.3	6.0	4.7	3.9	3.4
162.5°	23.6	19.7	16.7	15.4	14.1	11.6	9.4	7.7	6.4	5.1	4.7
165°	25.3	21.9	18.9	17.6	16.3	14.1	12.0	9.9	8.6	7.3	6.4
167.5°	26.6	24.0	21.0	19.7	18.9	16.7	14.6	12.9	11.6	10.3	9.0
170°	28.3	25.7	23.6	22.3	21.4	19.7	17.6	16.3	15.0	13.7	12.4
172.5°	30.0	27.9	26.2	25.3	24.4	22.7	21.0	19.7	18.9	17.6	16.7
175°	31.3	30.0	28.7	28.3	27.4	26.6	25.3	24.4	23.2	22.7	21.9
177.5°	33.0	32.2	31.7	31.3	30.9	30.4	29.6	29.2	28.7	28.3	27.9
180°	33.9	33.9	33.9	33.9	33.9	33.9	33.9	33.9	33.9	33.9	33.9



TEST NUMBER: P190102

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

**CANDELA DISTRIBUTION (continued):**

	150°	155°	157.5°	160°	165°	170°	175°	180°
0°	28.3	28.3	28.3	28.3	28.3	28.3	28.3	28.3
2.5°	21.9	21.4	21.4	21.0	21.0	21.0	20.6	21.0
5°	17.1	16.7	16.7	16.3	16.3	15.4	15.4	15.9
7.5°	13.3	12.4	12.4	12.0	12.0	11.6	11.1	11.6
10°	9.9	9.0	9.0	8.6	8.1	7.7	7.7	7.7
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	2.6	2.1	2.1	2.1
20°	2.6	2.1	2.1	2.1	2.1	2.1	2.1	2.1
22.5°	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1
25°	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1
27.5°	2.1	2.1	2.6	2.6	2.6	2.6	2.6	2.6
30°	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6
32.5°	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6
35°	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6
37.5°	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6
40°	2.6	2.6	2.6	2.6	2.6	2.1	2.1	2.1
42.5°	2.6	2.6	2.6	2.1	2.1	2.1	2.1	2.1
45°	2.6	2.6	2.1	2.1	2.1	1.7	1.7	1.7
47.5°	2.6	2.1	2.1	2.1	1.7	1.7	1.3	1.3
50°	2.1	1.7	1.7	1.7	1.3	1.3	1.3	1.3
52.5°	2.1	1.7	1.7	1.7	1.3	1.3	0.9	0.9
55°	2.1	1.7	1.3	1.3	1.3	0.9	0.9	0.9
57.5°	1.7	1.3	1.3	1.3	0.9	0.9	0.9	0.9
60°	1.7	1.3	1.3	0.9	0.9	0.9	0.4	0.4
62.5°	1.7	1.3	0.9	0.9	0.9	0.9	0.4	0.4
65°	1.3	1.3	0.9	0.9	0.9	0.9	0.4	0.4
67.5°	1.3	0.9	0.9	0.9	0.9	0.9	0.4	0.4
70°	1.3	0.9	0.9	0.9	0.9	0.9	0.9	0.9
72.5°	1.3	0.9	0.9	0.9	0.9	0.9	0.9	0.9
75°	1.3	0.9	0.9	0.9	0.9	0.9	0.9	0.9
77.5°	1.3	0.9	0.9	0.9	0.9	0.9	0.9	0.9
80°	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
82.5°	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
85°	0.9	0.9	0.9	0.9	0.9	0.4	0.4	0.4
87.5°	0.9	0.4	0.4	0.4	0.4	0.4	0.4	0.4
90°	0.9	0.9	0.9	0.4	0.4	0.4	0.4	0.4
92.5°	0.9	0.9	0.9	0.9	0.9	0.4	0.4	0.4
95°	0.9	0.9	0.9	0.9	0.4	0.4	0.4	0.4
97.5°	0.9	0.9	0.9	0.9	0.4	0.4	0.4	0.4
100°	0.9	0.9	0.9	0.9	0.4	0.4	0.4	0.4
102.5°	0.9	0.9	0.4	0.4	0.4	0.4	0.4	0.4
105°	0.9	0.9	0.4	0.4	0.4	0.4	0.4	0.4
107.5°	0.9	0.9	0.9	0.4	0.4	0.4	0.4	0.4
110°	1.3	0.9	0.9	0.4	0.4	0.4	0.4	0.4



TEST NUMBER: P190102

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

**CANDELA DISTRIBUTION (continued):**

	150°	155°	157.5°	160°	165°	170°	175°	180°
112.5°	1.3	0.9	0.9	0.9	0.4	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°	1.7	1.3	1.3	1.3	0.9	0.9	0.9	0.9
120°	1.7	1.7	1.3	1.3	0.9	0.9	0.9	0.9
122.5°	2.1	1.7	1.7	1.3	1.3	1.3	0.9	0.9
125°	2.1	1.7	1.7	1.7	1.3	1.3	1.3	1.3
127.5°	2.6	2.1	2.1	1.7	1.7	1.3	1.3	1.3
130°	3.0	2.6	2.6	2.1	1.7	1.7	1.7	1.7
132.5°	3.4	3.0	2.6	2.6	2.1	2.1	2.1	1.7
135°	3.9	3.4	3.0	3.0	2.6	2.6	2.1	2.1
137.5°	4.3	3.9	3.9	3.4	3.0	3.0	3.0	3.0
140°	4.3	4.3	3.9	3.9	3.9	3.4	3.4	3.4
142.5°	4.7	4.3	4.3	4.3	4.3	3.9	3.9	3.9
145°	4.7	4.7	4.7	4.7	4.7	4.3	4.3	4.3
147.5°	4.3	4.7	4.7	4.7	4.7	4.7	4.7	4.7
150°	4.3	4.3	4.3	4.7	4.7	4.7	4.7	4.7
152.5°	3.9	3.9	4.3	4.3	4.3	4.3	4.3	4.3
155°	3.4	3.4	3.4	3.9	3.9	3.9	3.9	3.9
157.5°	3.0	3.0	3.0	3.4	3.4	3.4	3.4	3.4
160°	3.4	3.0	3.0	3.0	3.0	3.0	3.0	3.0
162.5°	3.9	3.9	3.4	3.4	3.0	3.0	3.0	3.0
165°	5.6	5.1	4.7	4.7	4.3	4.3	3.9	3.9
167.5°	8.1	7.3	7.3	6.9	6.4	6.0	6.0	6.0
170°	11.6	11.1	10.7	10.3	9.9	9.4	9.4	9.4
172.5°	15.9	15.4	15.0	14.6	14.1	13.7	13.7	13.7
175°	21.0	20.6	20.6	20.2	19.3	19.3	19.3	19.3
177.5°	27.4	27.0	27.0	26.6	26.2	26.2	26.2	25.7
180°	33.9	33.9	33.9	33.9	33.9	33.9	33.9	33.9

(END OF REPORT)