

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: P190090

Luminaire Tested: **TRR11-LD4-10W-50-CL-BK-UNV-EDC1**

Issue Date: 3/3/2020



Test Information

Test Method: LM-79-08
Report Number: P190090
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (P27859)
Test Lab: INNOVATION CENTER(G2)
Issue Date: 3/3/2020
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: FAIL-SAFE
Catalog Number: TRR11-LD4-10W-50-CL-BK-UNV-EDC1
Description: TERRAPIN 11" LED WALL MOUNT WITH OPEN CLEAR LENS AND BRONZE RING
Light Source: (56) NICHIA 5000
NF2L757DRT
Ballast/Driver: OSRAM ELECTRONIC DRIVER PROGRAMMED AT 200mA
OT25W/1

Summary

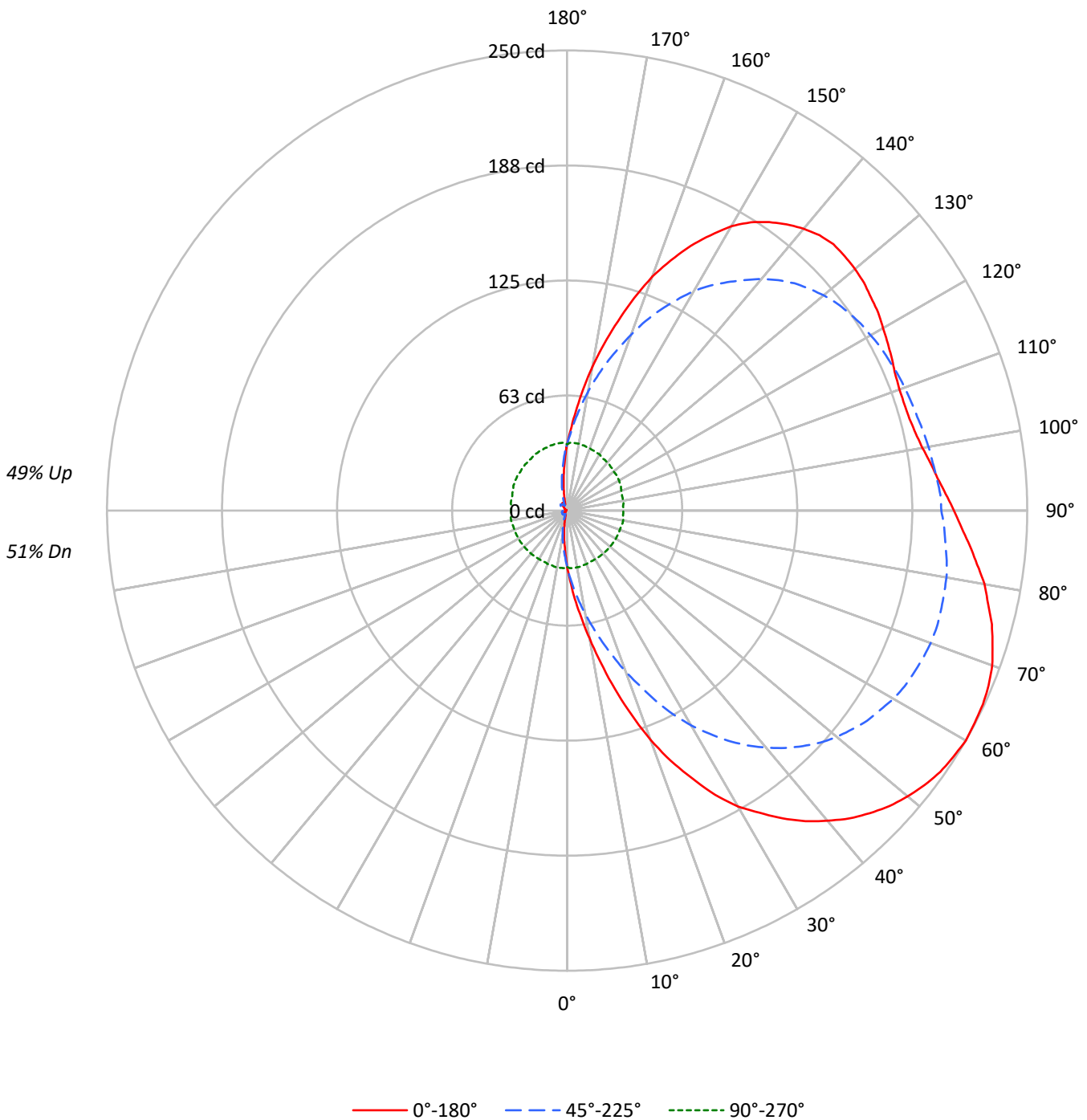
Lumens per Lamp: N/A
Luminaire Lumens: 1001.0 lumens
Efficiency: N/A
Efficacy: 100.1 lumens/watt
Spacing Criteria (0/90/45): 3.51 / 1.53 / 3.09
Luminous Opening: Rectangular w/ Sides (W: 0.92' x L: 0.29' x H: 0.92')
CIE Type: General Diffuse

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	107	107	107	107	99	99	99	99	84	84	84	70	70	70	57	57	57	51
1	93	87	81	76	85	80	74	70	66	62	59	54	51	48	43	41	39	33
2	83	73	65	58	75	67	59	53	55	50	45	45	40	37	35	32	29	24
3	74	62	53	46	68	57	49	42	47	41	35	38	33	29	29	26	22	18
4	67	54	45	37	61	50	41	34	41	34	29	33	27	23	25	21	18	14
5	61	47	38	31	56	43	35	28	36	29	24	29	23	19	22	18	15	11
6	56	42	33	26	51	39	30	24	32	25	20	26	20	16	20	15	12	9
7	51	38	29	22	47	34	26	21	28	22	17	23	18	14	18	14	10	8
8	48	34	25	19	43	31	23	18	26	19	15	21	16	12	16	12	9	6
9	44	31	22	17	40	28	21	15	23	17	13	19	14	10	15	11	8	5
10	41	28	20	15	37	26	18	14	21	15	11	17	12	9	14	10	7	5

AVERAGE LUMINANCE (cd/sqm):

	0°	90°	180°
0°	1228	1228	1228
5°	1521	1163	545
10°	1862	1088	226
15°	2272	1016	88
20°	2648	971	42
25°	2890	924	47
30°	3067	899	43
35°	3136	882	40
40°	3179	872	38
45°	3195	868	23
50°	3187	872	17
55°	3165	882	17
60°	3125	899	11
65°	3067	924	11
70°	3003	958	11
75°	2919	1003	11
80°	2837	1074	16
85°	2747	1133	11



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	3.2	0.3
10°-20°	12.0	1.2
20°-30°	26.7	2.7
30°-40°	45.2	4.5
40°-50°	63.9	6.4
50°-60°	79.8	8.0
60°-70°	91.2	9.1
70°-80°	96.8	9.7
80°-90°	96.5	9.6
90°-100°	92.8	9.3
100°-110°	87.6	8.7
110°-120°	81.5	8.1
120°-130°	73.1	7.3
130°-140°	60.9	6.1
140°-150°	45.1	4.5
150°-160°	28.0	2.8
160°-170°	13.3	1.3
170°-180°	3.7	0.4
0°-30°	41.8	4.2
0°-40°	87.0	8.7
0°-60°	230.7	23.0
0°-90°	515.1	51.5
90°-120°	261.8	26.2
90°-150°	440.9	44.0
90°-180°	486.0	48.6
0°-180°	1001.0	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	30	30	30	30	30	
5°	48	43	31	21	17	5
15°	100	74	31	9	4	29
25°	160	114	30	3	3	75
35°	204	153	30	3	3	128
45°	232	181	30	3	2	180
55°	248	199	30	3	1	221
65°	249	208	30	3	1	247
75°	239	210	30	3	1	252
85°	220	206	30	3	1	182
90°	210	203	30	2	1	115
95°	202	202	30	3	1	164
105°	193	197	31	3	0	204
115°	195	193	32	3	1	193
125°	202	187	33	4	1	181
135°	205	175	34	5	3	158
145°	191	151	34	4	5	120
155°	159	120	36	3	4	74
165°	106	83	36	9	4	31
175°	54	49	37	25	21	6
180°	36	36	36	36	36	



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CANDELA DISTRIBUTION (FULL):

	0°	5°	10°	15°	20°	22.5°	25°	30°	35°	40°	45°
0°	30.5	30.5	30.5	30.5	30.5	30.5	30.5	30.5	30.5	30.5	30.5
2.5°	38.2	38.2	38.2	37.7	37.7	37.3	37.7	37.3	36.9	36.9	36.5
5°	48.0	47.6	47.6	47.2	46.8	45.9	46.3	45.9	44.6	43.7	42.9
7.5°	58.3	58.3	58.3	57.5	56.6	56.6	55.8	54.9	52.8	51.5	49.8
10°	70.8	70.3	70.3	69.1	67.3	67.3	66.1	64.3	61.8	59.6	57.0
12.5°	84.5	84.1	83.6	81.9	79.8	78.5	78.1	75.1	72.1	68.6	65.2
15°	100.4	99.1	98.6	96.5	93.5	92.2	90.9	87.1	83.2	79.3	73.8
17.5°	116.2	115.4	115.4	112.4	108.9	106.4	105.1	99.9	94.8	89.6	83.2
20°	132.5	130.4	129.5	127.0	123.5	121.4	119.7	113.7	107.2	100.4	93.1
22.5°	147.1	145.4	144.1	141.5	137.7	135.1	133.4	126.5	119.7	112.4	102.9
25°	160.4	160.0	158.7	155.7	151.8	148.8	146.3	139.8	132.1	124.4	114.1
27.5°	174.1	172.8	171.6	169.0	164.7	161.7	158.7	151.8	144.5	135.5	124.8
30°	185.7	184.4	183.1	180.1	175.9	172.8	170.7	163.0	155.7	146.3	134.7
32.5°	194.7	194.3	193.0	190.0	185.7	183.1	180.6	173.3	165.1	155.3	143.7
35°	204.2	203.7	202.0	199.0	195.2	192.1	189.1	182.3	174.1	164.7	152.7
37.5°	212.7	212.3	210.6	207.6	203.3	201.2	197.7	190.9	182.3	172.4	160.8
40°	220.0	220.0	218.3	215.3	211.0	208.4	205.4	198.2	190.0	180.6	168.1
42.5°	226.9	226.5	224.7	221.7	217.5	215.3	211.9	205.4	196.9	187.4	175.0
45°	232.5	232.5	230.3	227.7	223.5	221.3	218.3	211.0	202.9	193.0	181.0
47.5°	237.6	237.2	235.5	232.9	228.2	226.0	223.0	216.6	208.0	198.2	186.6
50°	241.5	241.0	239.3	236.8	232.9	230.3	227.3	220.9	212.3	202.9	191.3
52.5°	244.9	244.0	242.8	239.8	235.9	233.8	230.8	224.3	216.6	206.7	195.2
55°	247.5	246.6	245.3	242.3	238.9	236.3	233.3	227.3	219.6	210.2	199.0
57.5°	248.8	248.3	246.6	244.0	240.2	238.0	235.5	229.0	221.7	212.7	201.6
60°	250.1	249.2	247.5	244.9	241.0	238.9	236.8	230.8	223.9	215.3	204.6
62.5°	249.6	249.2	247.5	244.9	241.5	239.3	237.2	231.6	224.7	216.6	206.7
65°	249.2	248.8	247.0	244.5	241.0	239.3	237.2	231.6	225.6	217.9	208.0
67.5°	247.9	247.0	245.3	243.2	239.8	238.0	236.3	231.6	225.6	218.3	209.3
70°	245.8	244.9	243.6	241.0	238.5	236.8	235.0	230.8	225.6	218.7	210.2
72.5°	242.3	241.9	240.2	238.5	235.9	234.2	232.5	229.0	224.3	218.3	210.6
75°	238.9	238.0	236.8	235.0	232.9	231.2	229.9	226.9	223.0	217.5	210.2
77.5°	234.2	233.8	232.9	231.2	229.5	228.2	227.3	224.7	221.3	216.6	209.7
80°	230.3	229.5	228.6	226.9	225.6	224.7	224.3	222.2	219.2	215.3	209.3
82.5°	224.7	224.3	223.5	222.2	221.3	220.5	220.0	218.7	217.0	213.2	208.0
85°	219.6	219.6	218.7	217.9	217.0	216.6	216.6	215.3	214.0	211.5	206.3
87.5°	214.5	214.5	214.0	213.2	212.7	212.7	212.3	211.9	211.5	209.3	205.0
90°	210.2	209.7	209.3	208.9	208.9	208.9	209.3	209.3	208.9	207.2	203.3
92.5°	205.9	205.4	205.0	205.0	205.9	205.9	206.3	207.2	207.2	206.3	202.9
95°	202.0	201.6	202.0	201.6	202.4	203.3	204.2	205.0	205.4	204.6	201.6
97.5°	199.0	198.6	198.6	199.0	200.3	200.7	201.6	202.4	203.3	202.9	200.3
100°	196.0	196.0	196.0	196.9	197.7	198.6	199.4	200.7	202.0	201.6	199.4
102.5°	193.9	193.9	194.3	194.7	196.0	196.9	197.7	199.4	200.3	200.3	198.2
105°	192.6	192.6	193.0	193.4	194.7	196.0	196.4	198.2	199.0	199.4	196.9
107.5°	192.1	192.1	192.6	193.4	194.7	195.6	196.4	197.7	199.0	198.6	196.0
110°	192.1	192.6	192.6	193.4	194.7	195.6	196.4	197.7	198.6	198.2	195.2



TEST NUMBER: P190090

CATALOG NUMBER: TRR11-LD4-10W-50-CL-BK-UNV-EDC1

CANDELA DISTRIBUTION (continued):

	0°	5°	10°	15°	20°	22.5°	25°	30°	35°	40°	45°
112.5°	193.0	193.4	193.4	194.7	195.6	196.4	196.9	198.2	198.2	197.7	194.3
115°	194.7	194.7	195.2	195.6	196.9	197.3	197.7	198.6	198.6	196.9	193.0
117.5°	196.4	196.4	196.9	197.3	198.2	198.2	198.6	199.0	198.6	196.4	192.1
120°	198.2	198.2	198.6	198.6	199.0	199.4	199.4	199.4	198.2	195.6	190.4
122.5°	200.3	199.9	200.3	200.3	200.7	200.7	200.3	199.9	198.2	195.2	189.1
125°	201.6	201.6	201.6	201.6	201.6	201.2	201.2	199.9	197.7	193.9	187.0
127.5°	203.3	202.9	202.9	202.4	202.0	201.6	201.2	199.4	196.4	191.7	184.9
130°	204.2	203.7	203.7	202.9	202.0	201.2	200.3	198.2	194.7	189.1	181.9
132.5°	204.6	204.2	203.7	202.9	201.6	200.7	199.4	196.9	192.6	186.6	178.4
135°	204.6	204.2	203.3	202.4	200.7	199.4	198.2	194.7	190.0	183.1	174.6
137.5°	202.9	202.4	201.6	200.3	198.6	197.3	195.6	191.3	186.1	178.9	169.8
140°	199.9	199.9	198.6	197.3	195.2	193.4	191.7	187.0	181.0	173.7	164.3
142.5°	196.0	195.6	194.3	192.6	190.4	188.3	186.6	181.4	175.4	167.7	157.8
145°	191.3	190.9	189.6	187.9	184.9	183.1	181.0	175.4	169.0	161.3	151.4
147.5°	185.7	185.3	183.6	181.9	178.9	176.7	174.6	169.0	162.1	154.4	145.0
150°	178.4	177.6	176.3	174.1	170.7	169.0	166.4	160.8	154.4	146.7	137.7
152.5°	168.6	168.1	166.4	164.7	161.3	159.1	157.4	151.4	145.0	137.7	129.1
155°	158.7	157.8	156.1	154.4	151.0	148.8	146.7	141.5	135.5	128.2	120.5
157.5°	147.1	146.7	145.4	143.3	140.3	138.1	136.0	131.2	125.7	118.8	111.5
160°	135.1	134.7	133.0	131.7	128.7	126.5	124.4	120.5	114.9	108.5	101.7
162.5°	121.0	120.5	119.7	117.9	115.4	113.2	111.9	107.2	102.9	97.8	92.2
165°	106.4	105.5	104.7	103.8	101.2	99.9	98.2	95.2	91.8	87.5	83.2
167.5°	92.6	92.2	91.4	90.5	88.8	87.5	86.2	84.1	81.1	78.1	74.2
170°	79.3	78.9	78.5	77.2	76.3	75.5	74.6	72.9	70.8	68.2	65.6
172.5°	66.1	66.1	65.6	64.8	64.3	63.5	63.0	62.2	60.9	58.8	57.0
175°	54.0	54.0	54.0	53.2	53.2	52.8	52.3	51.9	51.5	50.2	49.3
177.5°	43.7	43.3	43.3	43.7	43.3	43.3	42.9	42.9	42.9	42.5	42.0
180°	36.0	36.0	36.0	36.0	36.0	36.0	36.0	36.0	36.0	36.0	36.0



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CANDELA DISTRIBUTION (continued):

	50°	55°	60°	65°	67.5°	70°	75°	80°	85°	90°	95°
0°	30.5	30.5	30.5	30.5	30.5	30.5	30.5	30.5	30.5	30.5	30.5
2.5°	36.0	35.6	35.2	34.7	34.3	33.9	33.5	32.6	32.2	31.3	30.5
5°	42.0	40.7	39.5	38.2	37.3	36.9	35.6	34.3	32.6	31.3	30.0
7.5°	48.0	45.9	44.2	42.0	40.7	39.9	37.7	35.6	33.5	31.3	29.6
10°	54.5	51.5	48.5	45.5	44.2	42.5	39.5	36.9	33.9	31.3	28.7
12.5°	61.3	57.5	53.6	49.3	47.6	45.5	41.6	38.2	34.3	31.3	27.9
15°	69.1	64.3	59.2	53.6	51.5	48.9	44.2	39.5	35.2	30.9	27.4
17.5°	77.2	71.2	64.8	58.3	54.9	52.3	46.3	40.7	35.6	30.9	26.6
20°	85.8	78.1	69.9	62.6	59.2	55.3	48.5	42.0	36.0	30.9	26.2
22.5°	93.9	85.4	76.3	67.3	63.0	58.8	51.0	43.3	36.5	30.5	25.3
25°	103.4	93.1	82.8	72.1	66.9	62.6	53.2	44.6	37.3	30.5	24.9
27.5°	113.7	100.8	89.2	77.2	71.6	66.1	55.8	46.3	37.7	30.5	24.0
30°	122.2	108.9	95.2	82.3	75.9	69.9	58.3	47.6	38.6	30.5	23.6
32.5°	130.8	117.5	101.7	87.1	80.2	73.3	60.5	49.3	39.0	30.5	23.2
35°	139.0	124.8	108.1	92.2	84.5	77.2	63.0	50.6	39.9	30.5	22.7
37.5°	147.1	131.7	114.9	96.9	88.8	80.6	65.2	51.9	40.3	30.5	22.3
40°	154.4	138.5	121.0	101.7	93.1	84.5	67.8	53.2	40.7	30.5	21.9
42.5°	160.8	145.0	126.5	106.8	96.9	87.5	69.9	54.5	41.2	30.5	21.4
45°	167.3	150.5	132.1	111.5	100.8	90.9	72.5	55.8	42.0	30.5	21.0
47.5°	172.4	156.1	136.8	116.2	104.7	94.4	74.6	57.0	42.5	30.5	21.0
50°	177.1	160.8	141.5	120.1	108.9	97.4	76.8	58.3	42.9	30.5	20.6
52.5°	181.4	165.1	145.8	124.0	112.8	100.4	78.5	59.6	43.3	30.5	20.2
55°	185.3	169.0	149.7	127.8	116.2	103.4	80.6	60.9	43.7	30.5	20.2
57.5°	188.3	172.0	153.1	130.8	119.2	105.9	82.3	61.8	44.6	30.5	19.7
60°	191.3	175.4	156.6	133.8	121.8	108.9	84.1	62.6	44.6	30.5	19.7
62.5°	193.9	178.0	159.6	136.8	124.8	111.1	85.8	63.9	45.0	30.5	19.3
65°	196.0	180.6	162.1	139.4	127.0	114.1	87.5	64.8	45.9	30.5	19.3
67.5°	197.7	182.7	164.3	141.5	129.5	116.2	89.2	65.6	45.9	30.5	18.9
70°	199.0	184.4	166.4	144.1	131.7	118.4	90.5	66.5	46.3	30.5	18.9
72.5°	199.9	185.7	168.1	145.8	133.4	119.7	91.8	66.9	46.8	30.5	18.9
75°	200.3	186.6	169.0	147.1	134.7	121.0	92.6	67.8	46.8	30.5	18.9
77.5°	200.3	187.0	169.8	148.4	136.0	122.7	93.5	68.2	47.2	30.9	18.4
80°	200.3	187.4	170.7	149.7	137.2	123.5	94.4	69.1	47.6	30.9	18.4
82.5°	199.4	187.4	170.7	150.1	137.7	124.4	95.2	69.5	47.6	30.9	18.4
85°	198.6	187.0	171.1	150.1	138.1	124.8	95.6	69.5	47.6	30.5	18.4
87.5°	197.7	186.6	170.7	150.5	138.5	124.8	96.1	69.5	47.6	30.5	18.0
90°	196.9	186.1	170.7	150.5	138.5	125.2	96.1	69.9	48.0	30.5	18.0
92.5°	196.4	185.7	170.3	149.7	137.7	124.4	95.6	69.5	47.6	30.5	18.0
95°	195.2	184.9	169.8	149.7	137.7	124.4	95.6	69.9	47.6	30.5	18.4
97.5°	194.3	184.4	169.0	149.3	137.2	124.4	95.6	69.9	48.0	30.9	18.4
100°	193.4	183.1	168.1	148.4	136.8	124.0	95.6	69.9	48.0	30.9	18.4
102.5°	192.1	182.3	167.3	147.5	136.0	123.1	95.2	69.9	48.0	30.9	18.4
105°	190.9	181.0	166.0	146.3	135.1	122.2	94.8	69.9	48.0	30.9	18.9
107.5°	190.0	179.7	164.7	145.4	133.8	121.4	94.4	69.9	48.5	31.3	18.9
110°	188.7	178.0	163.4	143.7	132.5	120.5	93.9	69.5	48.5	31.3	19.3



TEST NUMBER: P190090

CATALOG NUMBER: TRR11-LD4-10W-50-CL-BK-UNV-EDC1

CANDELA DISTRIBUTION (continued):

	50°	55°	60°	65°	67.5°	70°	75°	80°	85°	90°	95°
112.5°	187.4	176.7	161.7	142.4	131.2	119.2	93.1	69.1	48.5	31.7	19.3
115°	186.1	174.6	159.6	140.7	129.5	117.5	92.2	68.6	48.5	32.2	19.7
117.5°	184.4	172.8	157.8	138.5	127.4	116.2	90.9	68.2	48.5	32.2	20.2
120°	182.3	170.7	155.3	136.4	125.7	114.1	89.6	67.8	48.0	32.6	20.6
122.5°	180.1	168.1	152.7	133.4	123.1	111.9	88.4	66.9	48.0	32.6	21.0
125°	178.0	165.6	149.7	130.8	120.5	108.9	86.6	66.1	48.0	33.0	21.4
127.5°	175.0	162.1	146.7	127.8	117.5	105.9	84.9	65.2	47.6	33.0	21.9
130°	171.6	158.7	142.8	124.4	114.5	103.4	83.2	64.3	47.2	33.0	22.3
132.5°	167.7	154.4	139.0	121.0	111.5	100.8	81.1	63.0	47.2	33.5	22.7
135°	163.4	150.5	135.1	117.5	107.2	97.8	79.3	62.2	46.8	33.5	23.2
137.5°	158.7	145.4	130.4	113.2	103.4	94.8	77.2	60.9	46.3	33.9	23.6
140°	153.1	139.8	125.2	108.5	99.5	91.4	74.6	59.6	45.9	33.9	24.4
142.5°	146.7	134.2	120.1	103.4	95.6	87.9	72.5	58.3	45.5	34.3	24.9
145°	140.7	128.2	114.9	99.1	91.8	84.9	70.3	57.0	45.0	34.3	25.7
147.5°	134.2	122.2	108.9	94.8	88.4	81.5	68.2	56.2	44.6	34.7	26.2
150°	127.0	115.8	102.9	90.5	84.5	78.1	66.1	54.5	44.2	35.2	27.0
152.5°	119.2	108.1	96.9	85.4	80.2	74.6	63.5	53.2	43.7	35.2	27.9
155°	111.1	100.8	90.9	80.6	75.9	71.2	60.9	51.9	43.3	35.6	28.7
157.5°	102.5	94.4	85.4	76.3	72.1	67.3	58.8	50.6	42.9	35.6	29.6
160°	94.4	87.1	79.3	71.6	68.2	63.9	56.2	49.3	42.5	36.0	30.5
162.5°	85.8	79.8	73.3	66.9	63.5	60.5	53.6	47.6	41.6	36.0	31.3
165°	77.6	72.9	67.3	62.2	59.6	56.6	51.0	45.9	41.2	36.5	32.2
167.5°	69.9	66.1	61.8	57.5	55.3	53.2	48.9	44.6	40.7	36.5	33.0
170°	62.6	59.6	56.2	53.2	51.5	49.8	46.3	42.9	39.9	36.9	33.9
172.5°	55.3	53.2	50.6	48.5	47.2	46.3	43.7	41.2	39.0	36.9	34.3
175°	48.0	46.8	45.5	44.2	43.3	42.9	41.2	39.9	38.2	36.9	35.6
177.5°	42.0	41.2	40.7	40.3	39.9	39.5	39.0	38.2	37.7	36.9	36.5
180°	36.0	36.0	36.0	36.0	36.0	36.0	36.0	36.0	36.0	36.0	36.0



TEST NUMBER: P190090

CATALOG NUMBER: TRR11-LD4-10W-50-CL-BK-UNV-EDC1

CANDELA DISTRIBUTION (continued):

	100°	105°	110°	112.5°	115°	120°	125°	130°	135°	140°	145°
0°	30.5	30.5	30.5	30.5	30.5	30.5	30.5	30.5	30.5	30.5	30.5
2.5°	30.0	29.2	28.3	27.9	27.9	27.0	26.2	25.7	25.3	24.4	24.0
5°	28.7	27.4	26.2	25.7	24.9	24.0	22.7	21.9	21.0	20.2	19.7
7.5°	27.4	25.7	24.0	23.2	22.3	21.0	19.7	18.4	17.6	16.3	15.4
10°	26.2	24.0	21.9	21.0	20.2	18.4	16.7	15.4	14.2	12.9	12.0
12.5°	24.9	22.3	19.7	18.9	17.6	15.9	14.2	12.4	11.2	9.9	8.6
15°	24.0	20.6	18.0	16.7	15.9	13.7	11.6	9.9	8.6	7.3	6.4
17.5°	22.7	19.3	16.3	15.0	13.7	11.6	9.4	7.7	6.4	5.6	4.7
20°	21.9	18.0	15.0	13.3	12.0	9.4	7.3	6.0	4.7	3.9	3.0
22.5°	20.6	16.7	13.3	12.0	10.3	7.7	6.0	4.7	3.4	3.0	2.1
25°	19.7	15.4	12.0	10.3	8.6	6.4	4.7	3.4	2.6	2.1	2.1
27.5°	18.9	14.2	10.7	9.0	7.3	5.1	3.9	2.6	2.1	2.1	2.1
30°	18.0	13.3	9.4	7.7	6.4	4.3	3.0	2.1	2.1	2.1	2.6
32.5°	17.2	12.4	8.1	6.9	5.6	3.4	2.6	2.1	2.1	2.6	2.6
35°	16.3	11.6	7.3	6.0	4.7	3.0	2.1	2.1	2.6	2.6	2.6
37.5°	15.9	10.7	6.4	5.1	3.9	2.6	2.1	2.6	2.6	2.6	3.0
40°	15.0	9.9	6.0	4.7	3.4	2.1	2.1	2.6	2.6	3.0	3.0
42.5°	14.6	9.0	5.1	3.9	3.0	2.1	2.6	2.6	3.0	3.0	3.0
45°	14.2	8.6	4.7	3.4	2.6	2.1	2.6	2.6	3.0	3.0	3.0
47.5°	13.7	8.1	4.3	3.4	2.6	2.6	2.6	3.0	3.0	3.0	3.0
50°	12.9	7.3	3.9	3.0	2.6	2.6	3.0	3.0	3.0	3.0	2.6
52.5°	12.4	6.9	3.9	2.6	2.6	2.6	3.0	3.0	3.0	3.0	2.6
55°	12.4	6.9	3.4	2.6	2.6	3.0	3.0	3.4	3.0	3.0	2.6
57.5°	12.0	6.4	3.4	2.6	2.6	3.0	3.0	3.4	3.0	3.0	2.6
60°	11.6	6.0	3.0	2.6	2.6	3.0	3.4	3.4	3.0	2.6	2.1
62.5°	11.2	5.6	3.0	2.6	3.0	3.0	3.4	3.4	3.0	2.6	2.1
65°	11.2	5.6	3.0	2.6	3.0	3.4	3.4	3.4	3.0	2.6	2.1
67.5°	10.7	5.1	3.0	2.6	3.0	3.4	3.4	3.4	3.0	2.6	1.7
70°	10.7	5.1	3.0	3.0	3.0	3.4	3.4	3.4	3.0	2.1	1.7
72.5°	10.3	5.1	3.0	3.0	3.0	3.4	3.9	3.4	3.0	2.1	1.7
75°	10.3	4.7	3.0	3.0	3.4	3.4	3.9	3.4	3.0	2.1	1.7
77.5°	9.9	4.7	3.0	3.0	3.4	3.9	3.9	3.4	2.6	2.1	1.7
80°	9.9	4.7	3.0	3.0	3.4	3.9	3.9	3.4	2.6	2.1	1.7
82.5°	9.9	4.7	3.0	3.0	3.4	3.9	3.9	3.4	2.6	2.1	1.7
85°	9.9	4.3	3.0	3.0	3.4	3.4	3.4	3.0	2.6	1.7	1.3
87.5°	9.4	4.3	2.6	3.0	3.0	3.4	3.4	3.0	2.1	1.7	1.3
90°	9.4	4.3	2.6	3.0	3.0	3.4	3.4	3.0	2.1	1.7	1.3
92.5°	9.4	4.3	3.0	3.4	3.4	3.9	3.9	3.4	2.6	1.7	1.3
95°	9.4	4.7	3.0	3.4	3.4	3.9	3.9	3.4	2.6	2.1	1.7
97.5°	9.9	4.3	3.0	3.0	3.4	3.9	3.9	3.4	2.6	2.1	1.3
100°	9.9	4.7	3.0	3.0	3.4	3.9	3.9	3.4	2.6	2.1	1.3
102.5°	9.9	4.7	3.0	3.0	3.4	3.9	3.9	3.4	2.6	2.1	1.7
105°	9.9	4.7	3.0	3.0	3.4	3.9	3.9	3.4	2.6	2.1	1.7
107.5°	10.3	4.7	3.0	3.0	3.4	3.9	3.9	3.4	3.0	2.1	1.7
110°	10.3	5.1	3.0	3.0	3.4	3.9	3.9	3.4	3.0	2.1	1.7



TEST NUMBER: P190090

CATALOG NUMBER: TRR11-LD4-10W-50-CL-BK-UNV-EDC1

CANDELA DISTRIBUTION (continued):

	100°	105°	110°	112.5°	115°	120°	125°	130°	135°	140°	145°
112.5°	10.7	5.1	3.0	3.0	3.4	3.9	3.9	3.9	3.0	2.6	1.7
115°	11.2	5.6	3.0	3.0	3.4	3.9	4.3	3.9	3.4	2.6	2.1
117.5°	11.6	6.0	3.4	3.0	3.4	3.9	4.3	4.3	3.9	3.0	2.6
120°	12.0	6.0	3.4	3.0	3.4	3.9	4.3	4.3	3.9	3.0	2.6
122.5°	12.4	6.4	3.4	3.0	3.4	3.9	4.3	4.3	3.9	3.4	3.0
125°	12.9	6.9	3.9	3.0	3.0	3.9	4.3	4.3	4.3	3.9	3.0
127.5°	13.3	7.3	4.3	3.4	3.0	3.9	4.3	4.7	4.3	3.9	3.4
130°	13.7	7.7	4.3	3.4	3.0	3.4	4.3	4.3	4.7	4.3	3.9
132.5°	14.6	8.1	4.7	3.9	3.0	3.4	3.9	4.3	4.7	4.3	4.3
135°	15.0	9.0	5.1	3.9	3.4	3.4	3.9	4.3	4.7	4.7	4.3
137.5°	15.9	9.9	5.6	4.7	3.4	3.0	3.4	4.3	4.3	4.7	4.7
140°	16.7	10.7	6.4	5.1	3.9	3.0	3.4	3.9	4.3	4.7	4.7
142.5°	17.6	11.6	7.3	5.6	4.7	3.4	3.4	3.9	4.3	4.7	4.7
145°	18.4	12.4	8.1	6.4	5.1	3.4	3.0	3.4	3.9	4.3	4.7
147.5°	19.3	13.7	9.0	7.3	6.0	4.3	3.0	3.4	3.4	3.9	4.3
150°	20.2	15.0	10.3	8.6	6.9	4.7	3.4	3.0	3.4	3.9	3.9
152.5°	21.4	16.3	11.6	9.9	8.1	6.0	4.3	3.4	3.0	3.4	3.9
155°	22.7	17.6	13.3	11.2	9.9	7.3	5.1	4.3	3.4	3.0	3.4
157.5°	24.0	19.3	15.0	13.3	11.6	8.6	6.4	5.1	4.3	3.4	3.4
160°	25.3	20.6	17.2	15.0	13.3	10.7	8.1	6.4	5.6	4.7	3.9
162.5°	26.6	22.3	18.9	17.2	15.4	12.9	10.3	8.6	7.3	6.0	5.1
165°	27.9	24.4	21.0	19.3	18.0	15.4	13.3	11.2	9.4	8.1	7.3
167.5°	29.6	26.2	23.6	21.9	20.6	18.4	16.3	14.2	12.9	11.2	10.3
170°	30.9	28.3	25.7	24.4	23.6	21.4	19.7	18.0	16.3	15.0	14.2
172.5°	32.2	30.5	28.3	27.4	26.2	24.9	23.2	21.9	20.6	19.3	18.4
175°	33.9	32.6	30.9	30.5	29.6	28.3	27.4	26.2	25.3	24.0	23.6
177.5°	35.6	34.7	33.9	33.9	33.0	32.6	31.7	31.3	30.9	30.0	30.0
180°	36.0	36.0	36.0	36.0	36.0	36.0	36.0	36.0	36.0	36.0	36.0



TEST NUMBER: P190090

CATALOG NUMBER: TRR11-LD4-10W-50-CL-BK-UNV-EDC1

CANDELA DISTRIBUTION (continued):

	150°	155°	157.5°	160°	165°	170°	175°	180°
0°	30.5	30.5	30.5	30.5	30.5	30.5	30.5	30.5
2.5°	23.6	23.6	23.2	23.2	22.7	22.7	22.3	22.3
5°	18.9	18.4	18.0	18.0	17.6	17.6	17.2	17.2
7.5°	15.0	14.2	13.7	13.7	13.3	12.9	12.4	12.4
10°	11.2	10.3	9.9	9.9	9.4	9.0	8.6	8.6
12.5°	8.1	7.3	6.9	6.9	6.4	6.0	5.6	6.0
15°	5.6	5.1	4.7	4.7	4.3	3.9	3.9	3.9
17.5°	3.9	3.4	3.4	3.0	2.6	2.6	2.6	2.6
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	2.6	2.6	2.6	2.6	2.6
27.5°	2.6	2.6	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	3.0	2.6	2.6	2.6	2.6	2.6
35°	3.0	3.0	3.0	3.0	3.0	2.6	2.6	2.6
37.5°	3.0	3.0	3.0	3.0	2.6	2.6	2.6	2.6
40°	3.0	3.0	2.6	2.6	2.6	2.6	2.6	2.6
42.5°	3.0	2.6	2.6	2.6	2.1	2.1	2.1	2.1
45°	2.6	2.6	2.6	2.1	2.1	2.1	1.7	1.7
47.5°	2.6	2.6	2.1	2.1	1.7	1.7	1.7	1.7
50°	2.6	2.1	2.1	1.7	1.7	1.7	1.3	1.3
52.5°	2.1	2.1	1.7	1.7	1.3	1.3	1.3	1.3
55°	2.1	1.7	1.7	1.7	1.3	1.3	1.3	1.3
57.5°	2.1	1.7	1.7	1.3	1.3	0.9	0.9	0.9
60°	1.7	1.7	1.3	1.3	0.9	0.9	0.9	0.9
62.5°	1.7	1.3	1.3	1.3	0.9	0.9	0.9	0.9
65°	1.7	1.3	1.3	1.3	0.9	0.9	0.9	0.9
67.5°	1.7	1.3	1.3	0.9	0.9	0.9	0.9	0.9
70°	1.3	1.3	1.3	0.9	0.9	0.9	0.9	0.9
72.5°	1.3	1.3	1.3	0.9	0.9	0.9	0.9	0.9
75°	1.3	1.3	1.3	0.9	0.9	0.9	0.9	0.9
77.5°	1.3	1.3	1.3	1.3	0.9	0.9	0.9	0.9
80°	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
82.5°	1.3	1.3	1.3	1.3	1.3	1.3	1.3	0.9
85°	1.3	0.9	0.9	0.9	0.9	0.9	0.9	0.9
87.5°	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
90°	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
92.5°	1.3	0.9	0.9	0.9	0.9	0.9	0.9	0.9
95°	1.3	0.9	0.9	0.9	0.9	0.9	0.9	0.9
97.5°	1.3	0.9	0.9	0.9	0.9	0.9	0.9	0.9
100°	1.3	0.9	0.9	0.9	0.9	0.9	0.9	0.9
102.5°	1.3	0.9	0.9	0.9	0.9	0.9	0.9	0.9
105°	1.3	0.9	0.9	0.9	0.9	0.9	0.9	0.4
107.5°	1.3	0.9	0.9	0.9	0.9	0.9	0.9	0.9
110°	1.3	0.9	0.9	0.9	0.9	0.9	0.4	0.9



TEST NUMBER: P190090

CATALOG NUMBER: TRR11-LD4-10W-50-CL-BK-UNV-EDC1

CANDELA DISTRIBUTION (continued):

	150°	155°	157.5°	160°	165°	170°	175°	180°
112.5°	1.3	1.3	0.9	0.9	0.9	0.4	0.4	0.4
115°	1.7	1.3	1.3	1.3	0.9	0.9	0.9	0.9
117.5°	1.7	1.7	1.3	1.3	1.3	1.3	0.9	0.9
120°	2.1	1.7	1.7	1.3	1.3	1.3	0.9	1.3
122.5°	2.1	1.7	1.7	1.7	1.3	1.3	1.3	1.3
125°	2.6	2.1	2.1	1.7	1.7	1.3	1.3	1.3
127.5°	3.0	2.6	2.1	2.1	1.7	1.7	1.7	1.7
130°	3.0	2.6	2.6	2.6	2.1	1.7	1.7	1.7
132.5°	3.4	3.0	3.0	3.0	2.6	2.1	2.1	2.1
135°	3.9	3.4	3.4	3.4	3.0	2.6	2.6	2.6
137.5°	4.3	3.9	3.9	3.9	3.4	3.0	3.0	3.0
140°	4.7	4.3	4.3	4.3	3.9	3.9	3.4	3.4
142.5°	4.7	4.7	4.7	4.7	4.3	4.3	4.3	4.3
145°	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7
147.5°	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7
150°	4.3	4.7	4.7	4.7	4.7	4.7	4.7	4.7
152.5°	3.9	4.3	4.3	4.3	4.3	4.7	4.7	4.7
155°	3.4	3.9	3.9	3.9	3.9	4.3	4.3	4.3
157.5°	3.0	3.4	3.4	3.4	3.4	3.4	3.9	3.9
160°	3.4	3.4	3.0	3.0	3.0	3.0	3.0	3.4
162.5°	4.7	4.3	3.9	3.9	3.4	3.4	3.4	3.4
165°	6.4	5.6	5.6	5.1	5.1	4.7	4.7	4.3
167.5°	9.0	8.1	8.1	7.7	7.3	6.9	6.9	6.4
170°	12.9	12.0	11.6	11.6	10.7	10.3	10.3	9.9
172.5°	17.6	16.7	16.3	16.3	15.9	15.0	15.0	14.6
175°	22.7	22.3	21.9	21.9	21.4	21.0	21.0	20.6
177.5°	29.2	28.7	28.7	28.7	28.3	28.3	27.9	27.9
180°	36.0	36.0	36.0	36.0	36.0	36.0	36.0	36.0

(END OF REPORT)