

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: P190117

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

Issue Date: 3/3/2020



Test Information

Test Method: LM-79-08
Report Number: P190117
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (P27872)
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-CSTG
Description: TERRAPIN 11" LED SHALLOW CAST 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

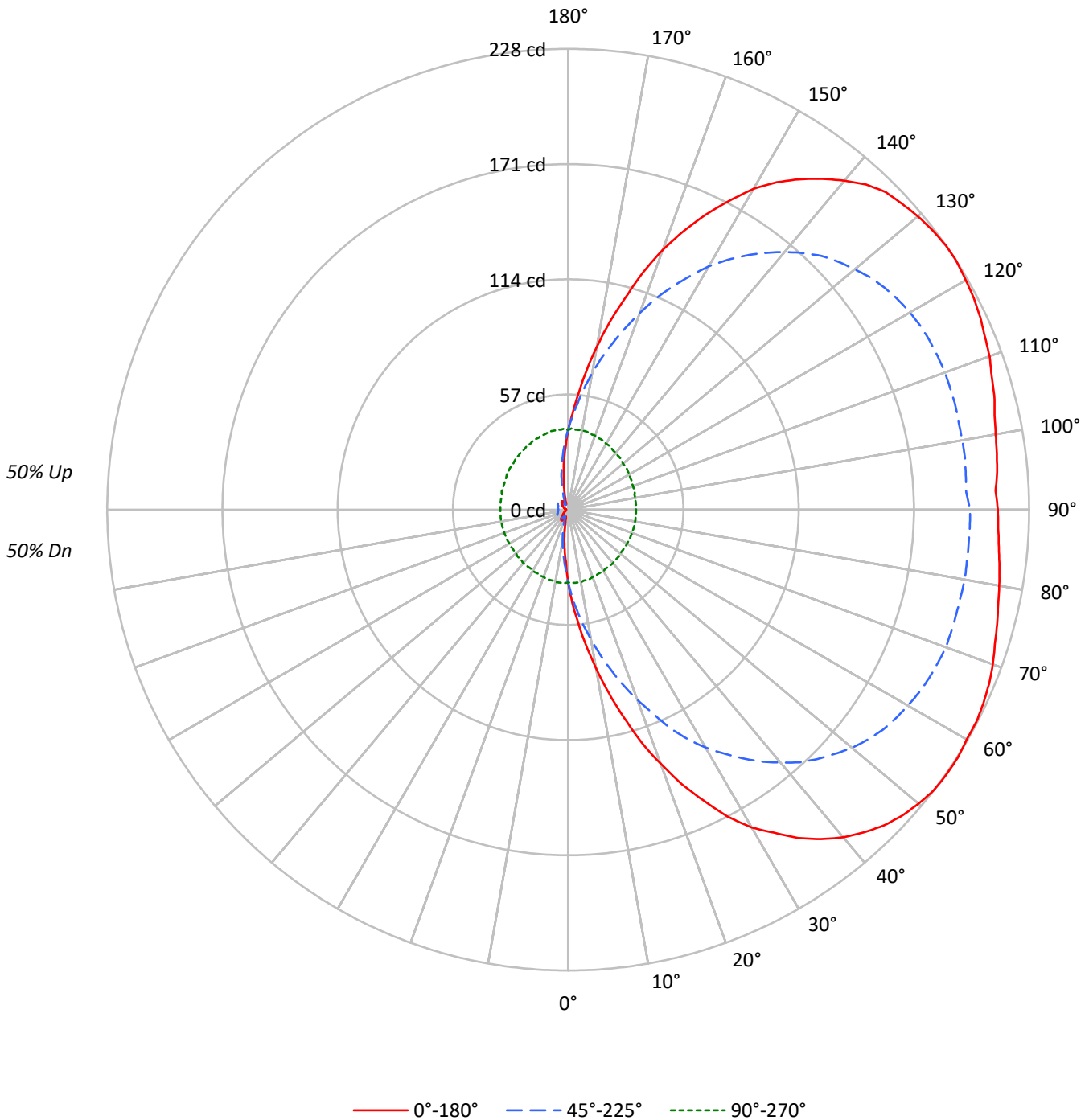
Lumens per Lamp: N/A
Luminaire Lumens: 1015.0 lumens
Efficiency: N/A
Efficacy: 101.5 lumens/watt
Spacing Criteria (0/90/45): 3.13 / 1.48 / 2.84
Luminous Opening: Rectangular w/ Sides (W: 0.92' x L: 0.29' x H: 0.92')
CIE Type: General Diffuse

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

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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	83	83	83	69	69	69	56	56	56	50
1	93	87	81	76	85	79	74	70	66	62	58	53	51	48	42	40	38	32
2	83	73	65	58	75	67	60	54	55	50	45	44	40	36	34	31	28	23
3	74	63	54	46	68	57	49	43	47	41	36	38	33	29	29	25	22	18
4	67	54	45	38	61	50	41	35	41	34	29	33	27	23	25	21	18	14
5	61	48	38	31	56	44	35	29	36	29	24	29	23	19	22	18	15	11
6	56	42	33	26	51	39	30	24	32	25	20	25	20	16	19	15	12	9
7	52	38	29	23	47	35	27	21	29	22	17	23	18	14	18	14	10	8
8	48	34	26	20	43	31	23	18	26	20	15	21	16	12	16	12	9	6
9	44	31	23	17	40	28	21	16	23	17	13	19	14	10	15	11	8	6
10	41	28	20	15	38	26	19	14	21	16	12	17	13	9	13	10	7	5

AVERAGE LUMINANCE (cd/sqm):

	0°	90°	180°
0°	1445	1445	1445
5°	1769	1349	631
10°	2096	1262	255
15°	2403	1180	100
20°	2672	1112	70
25°	2863	1060	88
30°	2998	1032	102
35°	3045	997	95
40°	3058	986	77
45°	3036	971	55
50°	2985	960	41
55°	2921	971	28
60°	2843	990	22
65°	2789	1018	22
70°	2731	1055	16
75°	2684	1104	16
80°	2667	1168	16
85°	2675	1249	16



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	3.7	0.4
10°-20°	13.2	1.3
20°-30°	27.9	2.7
30°-40°	45.7	4.5
40°-50°	63.1	6.2
50°-60°	77.3	7.6
60°-70°	87.2	8.6
70°-80°	92.9	9.2
80°-90°	95.0	9.4
90°-100°	94.6	9.3
100°-110°	92.6	9.1
110°-120°	87.3	8.6
120°-130°	77.8	7.7
130°-140°	63.8	6.3
140°-150°	46.4	4.6
150°-160°	28.6	2.8
160°-170°	13.9	1.4
170°-180°	4.0	0.4
0°-30°	44.8	4.4
0°-40°	90.5	8.9
0°-60°	230.9	22.7
0°-90°	506.0	49.8
90°-120°	274.5	27.0
90°-150°	462.6	45.6
90°-180°	509.0	50.1
0°-180°	1015.0	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	36	36	36	36	36	
5°	56	50	36	24	20	6
15°	106	82	36	9	4	31
25°	159	119	35	4	5	74
35°	198	150	34	5	6	124
45°	221	174	34	6	4	171
55°	228	190	34	7	2	204
65°	227	197	34	6	2	225
75°	220	199	34	5	1	232
85°	214	199	34	5	1	175
90°	212	199	34	5	1	116
95°	213	197	34	5	1	174
105°	218	198	34	5	1	231
115°	225	197	34	6	2	223
125°	228	191	35	6	4	204
135°	222	178	36	5	4	171
145°	200	154	37	4	5	125
155°	161	122	38	4	4	75
165°	108	85	39	12	5	32
175°	58	53	40	28	24	6
180°	39	39	39	39	39	



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CANDELA DISTRIBUTION (FULL):

	0°	5°	10°	15°	20°	22.5°	25°	30°	35°	40°	45°
0°	35.9	35.9	35.9	35.9	35.9	35.9	35.9	35.9	35.9	35.9	35.9
2.5°	46.0	45.6	45.2	44.7	44.7	44.7	44.7	44.3	43.8	43.4	42.9
5°	55.8	55.8	55.3	54.9	55.3	54.4	54.0	53.1	52.2	50.9	50.0
7.5°	67.7	67.3	66.4	66.0	65.1	64.6	64.2	62.9	61.5	58.9	57.5
10°	79.7	79.2	77.9	77.5	76.1	75.7	74.8	72.6	70.4	67.7	65.1
12.5°	93.0	92.1	91.2	89.9	88.1	87.6	86.3	83.7	80.6	77.0	73.5
15°	106.2	105.8	104.9	103.1	100.9	100.5	99.2	95.2	91.2	86.8	82.3
17.5°	120.8	121.3	119.5	117.7	114.7	113.8	110.2	106.7	101.8	96.5	91.2
20°	133.7	134.1	131.9	130.1	126.6	125.7	123.1	119.1	112.9	106.2	100.0
22.5°	147.0	147.0	144.8	142.5	139.0	137.7	134.6	130.1	123.9	117.3	108.9
25°	158.9	158.0	157.1	154.5	150.9	149.2	146.1	140.8	134.1	127.0	119.1
27.5°	171.3	170.0	168.7	166.0	162.0	160.2	157.1	151.8	144.3	136.8	127.9
30°	181.5	180.2	178.8	176.2	171.8	170.0	166.9	161.1	153.6	144.8	135.9
32.5°	189.5	189.5	187.7	185.0	180.6	178.4	175.7	169.5	161.6	153.2	143.0
35°	198.3	197.4	195.7	193.0	189.0	186.4	183.7	177.5	169.5	160.7	150.1
37.5°	205.4	205.0	203.2	200.5	196.5	194.3	191.2	185.0	177.1	167.8	157.1
40°	211.6	211.2	209.4	206.7	202.7	200.1	197.4	191.2	183.3	174.4	163.3
42.5°	216.5	216.0	214.7	212.0	208.1	205.8	202.7	196.5	189.0	180.2	169.5
45°	220.9	220.4	219.1	216.5	212.5	210.3	208.1	201.9	194.8	185.5	174.4
47.5°	224.0	223.5	222.2	219.6	216.0	213.8	211.6	205.8	198.8	189.9	178.8
50°	226.2	225.8	224.4	222.2	218.7	216.5	214.7	208.9	202.3	193.9	183.3
52.5°	228.0	227.5	225.8	224.0	220.4	218.7	216.5	211.6	205.0	196.5	186.8
55°	228.4	228.0	226.6	224.9	221.8	220.0	217.8	213.4	207.2	199.6	189.9
57.5°	228.4	228.0	226.6	224.9	222.2	220.4	218.7	214.3	208.5	201.4	192.1
60°	227.5	227.5	226.2	224.4	221.8	220.0	218.7	214.7	209.4	202.7	193.9
62.5°	227.5	227.1	225.8	224.0	221.8	220.0	218.7	214.7	210.3	203.6	195.7
65°	226.6	226.2	224.9	223.1	220.9	219.6	218.2	214.7	210.3	204.5	197.0
67.5°	225.3	224.9	223.5	222.2	220.0	218.7	217.3	214.3	210.3	205.0	197.9
70°	223.5	223.5	222.2	220.9	218.7	217.8	216.5	213.4	209.8	205.0	198.8
72.5°	221.3	221.3	220.4	219.1	217.3	216.0	215.1	212.5	209.4	205.0	198.8
75°	219.6	219.6	218.7	217.3	215.6	214.7	213.4	211.2	208.5	204.5	198.8
77.5°	217.8	217.3	216.9	215.6	213.8	212.9	212.0	210.3	207.6	204.1	198.8
80°	216.5	216.0	215.1	213.8	212.9	211.6	211.2	209.4	207.2	204.1	199.2
82.5°	215.1	215.1	213.8	212.9	211.2	210.3	209.8	208.5	206.3	203.6	198.8
85°	213.8	213.4	212.9	211.6	210.3	209.4	208.9	207.6	205.8	203.2	198.8
87.5°	212.9	212.9	212.0	210.7	209.8	208.9	208.5	207.2	205.4	202.7	198.8
90°	212.5	212.5	211.6	210.7	209.4	208.9	208.5	207.2	205.4	202.7	198.8
92.5°	211.6	211.6	210.3	209.4	208.5	208.1	207.2	206.3	204.5	201.4	197.0
95°	212.9	212.0	211.2	210.3	208.9	208.5	208.1	206.7	204.5	201.9	197.4
97.5°	213.8	213.4	212.5	211.2	210.3	209.4	208.9	207.6	205.4	202.3	197.9
100°	214.7	214.7	213.8	212.9	211.6	210.7	209.8	208.1	206.3	203.2	197.9
102.5°	216.0	216.0	215.1	213.8	212.5	212.0	211.2	209.4	206.7	203.2	197.9
105°	218.2	217.3	216.9	215.6	214.3	213.4	212.5	209.8	207.6	203.6	198.3
107.5°	219.6	219.1	218.2	216.9	215.6	214.7	213.8	211.6	208.1	204.1	198.3
110°	221.8	221.3	220.4	219.1	217.3	216.5	215.1	212.5	208.9	204.5	198.3



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CANDELA DISTRIBUTION (continued):

	0°	5°	10°	15°	20°	22.5°	25°	30°	35°	40°	45°
112.5°	223.1	222.7	221.8	220.4	218.2	217.3	216.0	213.4	209.4	204.5	197.9
115°	224.9	224.4	223.5	221.8	219.6	218.7	217.3	214.3	209.8	204.5	197.4
117.5°	226.2	225.8	224.9	223.1	220.9	219.6	217.8	214.7	210.3	204.1	196.5
120°	227.1	226.6	225.8	224.0	221.3	219.6	218.2	214.7	209.4	203.2	195.2
122.5°	228.0	227.1	226.2	224.0	221.8	220.0	218.2	214.3	208.9	202.3	193.4
125°	228.0	227.5	226.2	224.0	221.3	219.6	217.8	213.4	207.6	200.1	191.2
127.5°	227.1	226.6	225.3	223.1	220.4	218.7	216.5	211.6	205.4	197.9	188.6
130°	225.8	225.3	224.0	221.8	218.7	216.5	214.7	209.4	203.2	194.8	185.0
132.5°	224.0	223.5	222.2	219.6	216.5	214.7	212.5	206.7	200.1	191.2	181.5
135°	222.2	221.3	219.6	217.3	214.3	211.6	209.4	203.6	196.5	187.7	177.5
137.5°	218.2	216.9	215.6	213.4	209.8	207.2	205.0	199.2	191.7	182.4	172.2
140°	212.5	212.0	210.3	207.6	204.1	201.9	199.2	193.0	185.5	176.2	166.4
142.5°	206.3	205.8	204.1	201.4	197.4	195.2	193.0	186.8	178.8	170.0	160.2
145°	199.6	199.2	197.0	194.8	190.8	188.6	185.9	179.7	172.2	162.9	153.6
147.5°	192.1	191.7	189.9	187.2	183.3	180.6	178.4	172.2	164.7	155.8	146.5
150°	183.3	181.9	180.2	178.0	174.0	171.8	170.0	163.3	155.8	147.9	139.0
152.5°	172.2	171.3	169.5	167.3	163.8	161.1	159.4	153.6	146.1	138.6	130.1
155°	161.1	160.2	158.5	156.7	152.7	150.5	149.2	143.0	136.8	129.7	121.7
157.5°	149.2	148.3	147.4	144.8	141.7	139.4	137.7	132.8	126.6	120.0	112.9
160°	136.8	135.5	134.1	132.8	129.7	127.5	126.2	121.7	116.0	109.3	103.6
162.5°	123.1	122.2	120.8	119.5	117.3	115.1	113.3	108.9	104.5	99.2	94.3
165°	108.0	107.1	106.2	105.4	103.1	101.4	100.0	97.4	93.8	89.4	85.4
167.5°	95.2	94.3	93.8	92.5	91.2	89.4	89.0	86.3	83.7	80.1	77.0
170°	81.9	81.5	81.0	80.1	78.8	77.9	77.0	75.3	73.9	70.8	68.6
172.5°	69.5	69.1	68.6	68.2	67.3	66.4	66.0	64.6	63.7	62.0	60.6
175°	57.5	57.1	57.1	56.7	56.7	55.8	55.8	54.9	54.4	53.1	52.7
177.5°	47.4	46.9	47.4	46.9	46.9	46.5	46.9	46.5	46.5	46.5	46.0
180°	39.4	39.4	39.4	39.4	39.4	39.4	39.4	39.4	39.4	39.4	39.4



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CANDELA DISTRIBUTION (continued):

	50°	55°	60°	65°	67.5°	70°	75°	80°	85°	90°	95°
0°	35.9	35.9	35.9	35.9	35.9	35.9	35.9	35.9	35.9	35.9	35.9
2.5°	42.5	42.1	41.2	40.7	40.3	39.8	39.0	38.1	37.2	36.3	35.4
5°	48.7	47.4	46.0	44.7	43.8	42.9	41.6	39.8	38.1	36.3	35.0
7.5°	55.3	53.6	50.9	48.7	47.4	46.0	43.8	41.2	39.0	36.3	34.1
10°	62.0	59.3	55.8	52.7	50.9	49.1	46.0	42.5	39.4	36.3	33.2
12.5°	69.9	65.1	61.1	56.7	54.4	52.2	48.3	43.8	39.8	35.9	32.3
15°	77.5	72.2	66.8	61.5	58.4	56.2	50.9	45.6	40.3	35.9	31.4
17.5°	85.4	78.8	72.2	66.0	62.4	59.3	53.1	46.9	41.2	35.9	31.0
20°	93.4	85.4	77.9	70.4	66.4	62.4	55.3	48.3	41.6	35.4	30.1
22.5°	100.9	92.1	83.7	74.8	70.4	66.0	57.5	49.6	42.1	35.4	29.2
25°	108.9	99.2	89.4	79.7	74.4	69.5	59.8	50.9	42.5	35.0	28.3
27.5°	118.2	106.2	95.6	84.5	78.8	73.0	62.4	52.2	43.4	35.0	27.9
30°	125.3	113.3	100.9	89.0	82.8	76.6	64.6	53.6	43.8	35.0	27.0
32.5°	132.4	120.0	106.7	93.4	86.3	79.7	67.3	54.9	44.3	34.5	26.6
35°	139.0	126.2	112.4	97.4	90.3	83.2	69.5	56.2	44.7	34.5	26.1
37.5°	145.6	132.4	117.7	101.8	94.3	86.3	71.7	57.5	45.2	34.5	25.2
40°	151.4	137.7	123.1	106.2	97.8	89.4	73.9	58.9	45.6	34.5	24.8
42.5°	156.7	143.0	127.5	109.8	101.4	92.5	75.7	59.8	46.0	34.1	24.3
45°	162.5	147.9	131.9	115.1	104.5	95.6	77.9	61.1	46.5	34.1	23.9
47.5°	166.9	152.3	135.9	118.6	108.0	98.7	79.7	62.4	46.9	34.1	23.5
50°	170.9	156.3	139.9	121.7	111.1	101.4	81.9	63.3	47.4	33.6	23.0
52.5°	174.9	160.2	143.9	125.3	115.1	104.0	83.7	64.2	47.8	33.6	22.6
55°	178.0	163.8	147.0	128.4	117.7	106.2	85.4	65.5	48.3	33.6	22.1
57.5°	180.6	166.4	150.1	130.6	120.0	108.5	87.2	66.4	48.3	33.6	21.7
60°	182.8	169.1	152.3	133.2	122.6	110.7	88.5	67.3	48.7	33.6	21.7
62.5°	185.0	171.3	154.9	135.9	124.8	113.3	90.3	68.2	49.1	33.6	21.2
65°	186.8	173.5	157.1	138.1	127.0	116.0	91.6	69.1	49.6	33.6	21.2
67.5°	188.6	175.7	159.4	139.9	129.3	117.7	93.0	69.9	49.6	33.6	21.2
70°	189.5	177.1	161.1	141.7	130.6	119.5	94.3	70.4	50.0	33.6	20.8
72.5°	190.3	178.4	162.5	143.4	132.4	120.8	95.2	71.3	50.5	33.6	20.8
75°	190.8	178.8	163.8	144.3	133.2	121.7	96.1	71.7	50.5	33.6	20.8
77.5°	191.2	179.7	164.2	145.2	134.1	122.6	96.9	72.2	50.9	33.6	20.4
80°	191.7	180.6	165.1	146.1	135.0	123.5	97.4	72.6	50.9	33.6	20.4
82.5°	191.7	180.6	165.6	146.5	135.5	123.9	97.8	72.6	50.9	33.6	20.4
85°	191.2	181.1	165.6	147.0	135.9	123.9	98.3	73.0	50.9	33.6	20.4
87.5°	191.7	181.1	166.4	147.4	136.3	124.4	98.3	73.0	50.9	33.6	20.4
90°	191.7	181.5	166.4	147.9	136.3	124.8	98.7	73.5	51.3	33.6	20.4
92.5°	190.3	179.7	165.1	146.5	135.5	123.9	97.8	73.0	51.3	33.6	20.8
95°	190.3	179.7	165.1	146.5	135.5	123.9	97.8	73.0	51.3	33.6	20.8
97.5°	190.3	179.7	165.1	146.1	135.0	123.5	97.8	73.0	51.3	33.6	20.8
100°	190.8	179.3	164.7	145.6	134.6	123.1	97.4	73.0	51.3	33.6	20.8
102.5°	190.8	179.3	164.2	145.2	134.1	122.6	96.9	72.6	51.3	33.6	20.8
105°	190.3	178.8	163.3	144.3	133.7	122.2	96.5	72.2	51.3	34.1	21.2
107.5°	189.9	178.0	162.5	143.4	132.4	121.3	96.1	71.7	50.9	34.1	21.2
110°	189.5	177.1	161.6	142.1	131.5	120.0	95.2	71.7	50.9	34.1	21.7



TEST NUMBER: P190117

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

CANDELA DISTRIBUTION (continued):

	50°	55°	60°	65°	67.5°	70°	75°	80°	85°	90°	95°
112.5°	188.1	175.7	159.8	140.3	129.7	118.2	93.8	70.8	50.9	34.1	21.7
115°	187.2	174.9	158.5	139.0	128.4	116.9	93.0	70.4	50.9	34.5	22.1
117.5°	186.4	173.1	156.7	137.2	126.6	115.1	91.6	69.9	50.5	34.5	22.6
120°	184.1	170.9	154.5	135.0	124.4	113.3	90.3	69.1	50.5	35.0	23.0
122.5°	182.4	168.2	151.8	132.8	122.6	111.6	89.0	68.2	50.0	35.0	23.5
125°	179.7	165.6	149.2	130.1	120.0	108.9	87.6	67.7	50.0	35.4	23.5
127.5°	176.6	162.5	146.1	127.0	117.3	106.2	85.9	66.4	49.6	35.4	23.9
130°	173.1	158.5	142.5	123.9	114.2	104.0	84.1	65.5	49.6	35.4	24.3
132.5°	169.1	154.9	138.6	120.8	111.1	101.4	82.3	64.6	49.1	35.9	25.2
135°	165.1	150.9	135.0	117.3	107.6	98.7	80.6	63.7	49.1	36.3	25.7
137.5°	159.8	145.6	130.6	112.9	104.0	95.6	78.8	62.9	48.7	36.3	26.1
140°	154.0	140.3	125.3	108.5	100.5	92.5	76.6	61.5	48.3	36.7	27.0
142.5°	148.3	134.6	120.8	104.0	96.9	89.4	74.4	60.2	47.8	36.7	27.4
145°	142.1	129.3	115.1	100.5	93.4	86.3	72.6	59.3	47.8	37.2	28.3
147.5°	135.5	123.1	109.8	96.1	89.9	83.2	70.4	58.4	47.4	37.6	29.2
150°	128.4	116.9	104.0	91.6	85.9	79.7	68.2	57.1	46.9	37.6	30.1
152.5°	120.4	108.9	98.7	87.2	81.9	76.1	66.0	55.8	46.5	38.1	30.5
155°	112.4	102.3	93.0	82.8	77.9	73.0	63.3	54.4	46.0	38.5	31.4
157.5°	104.5	95.6	87.2	77.9	73.9	69.5	61.1	53.1	45.6	38.5	32.3
160°	96.5	89.0	81.5	73.5	69.9	66.4	58.9	51.8	45.2	39.0	33.2
162.5°	88.5	81.9	75.7	69.1	66.0	62.9	56.2	50.5	44.7	39.0	34.1
165°	80.6	75.3	69.9	64.2	62.0	59.3	54.0	49.1	44.3	39.4	35.0
167.5°	73.0	68.6	64.6	60.2	58.4	56.2	51.8	47.8	43.8	39.8	35.9
170°	65.5	62.4	59.3	55.8	54.4	52.7	49.1	46.0	42.9	39.8	36.7
172.5°	58.4	55.8	54.0	51.3	50.5	49.1	46.9	44.7	42.1	39.8	37.6
175°	51.3	50.0	48.7	46.9	46.5	45.6	44.3	42.9	41.6	39.8	38.5
177.5°	45.2	44.7	44.3	43.4	43.4	42.9	42.1	41.6	41.2	40.3	39.4
180°	39.4	39.4	39.4	39.4	39.4	39.4	39.4	39.4	39.4	39.4	39.4



TEST NUMBER: P190117

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

CANDELA DISTRIBUTION (continued):

	100°	105°	110°	112.5°	115°	120°	125°	130°	135°	140°	145°
0°	35.9	35.9	35.9	35.9	35.9	35.9	35.9	35.9	35.9	35.9	35.9
2.5°	34.5	34.1	33.2	32.3	32.3	31.4	30.5	29.7	29.2	28.8	27.9
5°	33.2	31.9	30.5	29.7	29.2	27.4	26.6	25.2	24.3	23.0	22.6
7.5°	31.9	30.1	27.9	27.0	26.1	24.3	22.6	21.2	19.9	18.6	17.7
10°	30.5	27.9	25.7	24.3	23.0	21.2	19.5	17.7	15.9	14.6	13.3
12.5°	28.8	26.1	23.0	21.7	20.4	18.1	15.9	14.2	12.4	10.6	9.7
15°	27.9	24.3	20.8	19.5	18.1	15.5	12.8	11.1	9.3	8.0	7.1
17.5°	26.6	22.6	19.0	17.3	15.9	12.8	10.6	8.4	7.1	5.8	4.9
20°	25.2	20.8	16.8	15.5	13.7	10.6	8.4	6.6	5.3	4.4	4.0
22.5°	23.9	19.5	15.1	13.3	11.5	8.4	6.6	4.9	4.0	3.5	3.5
25°	22.6	18.1	13.3	11.5	9.7	7.1	5.3	4.0	3.5	3.5	4.0
27.5°	21.7	16.8	12.0	10.2	8.4	6.2	4.4	3.5	3.5	4.0	4.4
30°	20.8	15.5	10.6	8.9	7.1	4.9	3.5	3.5	4.0	4.4	4.9
32.5°	19.9	14.2	9.3	7.5	6.2	4.4	3.5	4.0	4.4	4.9	5.3
35°	19.0	13.3	8.4	6.6	5.3	4.0	3.5	4.0	4.9	5.3	5.8
37.5°	18.1	12.0	7.5	5.8	4.9	3.5	4.0	4.4	5.3	5.8	6.2
40°	17.3	11.1	6.6	5.3	4.4	3.5	4.4	4.9	5.8	6.2	6.2
42.5°	16.8	10.2	6.2	4.9	4.0	3.5	4.4	5.3	5.8	6.2	6.2
45°	15.9	9.7	5.8	4.4	3.5	4.0	4.9	5.8	6.2	6.2	6.2
47.5°	15.5	8.9	4.9	4.0	3.5	4.4	5.3	6.2	6.2	6.2	5.8
50°	15.1	8.4	4.9	4.0	3.5	4.4	5.8	6.2	6.6	6.2	5.8
52.5°	14.2	8.0	4.4	3.5	4.0	4.9	5.8	6.6	6.6	6.2	5.3
55°	13.7	7.5	4.0	3.5	4.0	5.3	6.2	6.6	6.6	5.8	5.3
57.5°	13.3	7.1	4.0	3.5	4.0	5.3	6.2	6.6	6.2	5.8	4.9
60°	12.8	6.6	4.0	4.0	4.4	5.8	6.6	6.6	6.2	5.3	4.4
62.5°	12.8	6.6	4.0	4.0	4.4	5.8	6.6	6.6	6.2	5.3	4.4
65°	12.4	6.2	4.0	4.0	4.9	5.8	6.6	6.6	5.8	4.9	4.0
67.5°	12.0	6.2	4.0	4.4	4.9	6.2	6.6	6.6	5.8	4.9	4.0
70°	12.0	5.8	4.0	4.4	4.9	6.2	6.6	6.6	5.8	4.4	4.0
72.5°	11.5	5.8	4.0	4.4	4.9	6.2	6.6	6.2	5.3	4.4	3.5
75°	11.5	5.8	4.0	4.4	5.3	6.2	6.6	6.2	5.3	4.4	3.5
77.5°	11.5	5.8	4.0	4.4	5.3	6.6	6.6	6.2	5.3	4.0	3.5
80°	11.5	5.3	4.0	4.4	5.3	6.6	6.6	6.2	5.3	4.0	3.5
82.5°	11.5	5.8	4.0	4.9	5.3	6.6	6.6	6.2	4.9	4.0	3.1
85°	11.1	5.3	4.0	4.4	5.3	6.6	6.6	5.8	4.9	4.0	3.1
87.5°	11.1	5.3	4.0	4.4	5.3	6.2	6.6	5.8	4.9	4.0	3.1
90°	11.1	5.3	4.0	4.4	5.3	6.2	6.6	5.8	4.9	3.5	3.1
92.5°	11.5	5.8	4.0	4.4	5.3	6.2	6.6	5.8	4.9	4.0	3.1
95°	11.5	5.8	4.0	4.4	5.3	6.2	6.6	6.2	4.9	4.0	3.5
97.5°	11.5	5.8	4.0	4.4	4.9	6.2	6.6	5.8	4.9	4.0	3.5
100°	11.5	5.8	4.0	4.0	4.9	5.8	6.2	5.8	5.3	4.0	3.5
102.5°	12.0	5.8	3.5	4.0	4.9	5.8	6.2	6.2	5.3	4.4	3.5
105°	12.0	5.8	3.5	4.0	4.4	5.8	6.2	6.2	5.3	4.4	3.5
107.5°	12.0	5.8	3.5	3.5	4.4	5.3	6.2	5.8	5.3	4.4	4.0
110°	12.4	6.2	3.5	3.5	4.0	5.3	6.2	6.2	5.3	4.9	4.0



TEST NUMBER: P190117

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

CANDELA DISTRIBUTION (continued):

	100°	105°	110°	112.5°	115°	120°	125°	130°	135°	140°	145°
112.5°	12.4	6.2	3.5	3.5	4.0	4.9	5.8	5.8	5.3	4.9	4.0
115°	12.8	6.6	3.5	3.5	4.0	4.9	5.8	6.2	5.8	5.3	4.4
117.5°	13.7	7.1	4.0	3.5	3.5	4.9	5.8	6.2	5.8	5.3	4.9
120°	13.7	7.5	4.0	3.5	3.5	4.4	5.3	6.2	5.8	5.3	4.9
122.5°	14.6	8.0	4.0	3.5	3.5	4.4	5.3	5.8	6.2	5.8	5.3
125°	15.1	8.4	4.4	3.5	3.5	4.0	4.9	5.8	5.8	5.8	5.3
127.5°	15.5	8.9	4.9	3.5	3.1	4.0	4.9	5.3	5.8	5.8	5.3
130°	15.9	9.3	5.3	4.0	3.5	3.5	4.4	4.9	5.3	5.8	5.3
132.5°	16.8	10.2	5.8	4.0	3.5	3.5	4.0	4.9	5.3	5.3	5.3
135°	17.3	11.1	6.2	4.4	3.5	3.1	3.5	4.4	4.9	5.3	5.3
137.5°	18.1	11.5	6.6	5.3	4.0	3.1	3.5	4.0	4.4	4.9	5.3
140°	19.0	12.8	7.5	5.8	4.4	3.1	3.1	3.5	4.0	4.9	4.9
142.5°	19.9	13.7	8.9	6.6	5.3	3.1	3.1	3.5	4.0	4.4	4.4
145°	21.2	15.1	9.7	7.5	6.2	4.0	3.1	3.1	3.5	4.0	4.4
147.5°	22.1	15.9	11.1	8.9	7.1	4.9	3.1	2.7	3.1	3.5	4.0
150°	23.0	17.3	12.4	10.2	8.4	5.8	4.0	3.1	2.7	3.1	3.5
152.5°	24.3	18.6	14.2	12.0	9.7	7.1	4.9	3.5	2.7	2.7	3.1
155°	25.2	20.4	15.5	13.7	12.0	8.4	6.2	4.4	3.5	2.7	2.7
157.5°	26.6	21.7	17.7	15.5	13.7	10.2	8.0	5.8	4.4	3.5	3.1
160°	28.3	23.5	19.5	17.7	15.9	12.8	9.7	8.0	6.2	4.9	4.0
162.5°	29.7	25.2	21.7	19.9	18.1	15.5	12.4	10.2	8.4	7.1	5.8
165°	31.0	27.4	23.9	22.6	20.8	18.1	15.5	13.3	11.5	9.7	8.4
167.5°	32.3	29.2	26.6	24.8	23.5	21.2	19.0	16.8	15.1	13.3	12.0
170°	34.1	31.4	28.8	27.9	26.6	24.3	22.6	20.8	19.0	17.7	16.4
172.5°	35.4	33.2	31.4	30.5	29.7	27.9	26.1	24.8	23.5	22.1	21.2
175°	36.7	35.4	34.1	33.2	32.8	31.4	30.5	29.7	28.3	27.0	26.6
177.5°	38.5	38.1	37.2	36.7	36.3	35.9	35.4	34.5	34.1	33.2	32.8
180°	39.4	39.4	39.4	39.4	39.4	39.4	39.4	39.4	39.4	39.4	39.4



TEST NUMBER: P190117

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

CANDELA DISTRIBUTION (continued):

	150°	155°	157.5°	160°	165°	170°	175°	180°
0°	35.9	35.9	35.9	35.9	35.9	35.9	35.9	35.9
2.5°	27.4	27.0	26.6	26.6	26.6	26.1	25.7	25.7
5°	21.7	20.8	20.8	20.8	20.4	19.9	19.5	19.9
7.5°	16.8	15.9	15.5	15.5	15.1	14.6	14.2	14.6
10°	12.4	11.5	11.1	10.6	10.2	9.7	9.7	9.7
12.5°	8.4	8.0	7.5	7.1	6.6	6.6	6.2	6.2
15°	6.2	5.8	5.3	4.9	4.9	4.4	4.4	4.4
17.5°	4.4	4.0	4.0	3.5	3.5	3.5	3.5	3.5
20°	3.5	3.5	3.5	3.5	3.5	3.5	4.0	3.5
22.5°	3.5	4.0	4.0	4.0	4.4	4.4	4.4	4.4
25°	4.0	4.4	4.4	4.9	4.9	4.9	4.9	4.9
27.5°	4.9	4.9	5.3	5.3	5.3	5.8	5.8	5.8
30°	5.3	5.8	5.8	5.8	5.8	6.2	6.2	6.2
32.5°	5.8	5.8	6.2	6.2	6.2	6.2	6.2	6.2
35°	6.2	6.2	6.2	6.2	6.2	6.2	6.2	6.2
37.5°	6.2	6.2	6.2	6.2	5.8	5.8	5.8	5.8
40°	6.2	6.2	5.8	5.8	5.8	5.3	5.3	5.3
42.5°	6.2	5.8	5.3	5.3	4.9	4.9	4.9	4.4
45°	5.8	5.3	5.3	4.9	4.4	4.4	4.0	4.0
47.5°	5.3	4.9	4.9	4.4	4.0	3.5	3.5	3.5
50°	5.3	4.4	4.4	4.0	3.5	3.5	3.1	3.1
52.5°	4.9	4.0	4.0	3.5	3.1	3.1	2.7	2.7
55°	4.4	4.0	3.5	3.1	2.7	2.7	2.2	2.2
57.5°	4.0	3.5	3.1	2.7	2.7	2.2	2.2	2.2
60°	4.0	3.1	3.1	2.7	2.2	2.2	1.8	1.8
62.5°	3.5	3.1	2.7	2.7	2.2	1.8	1.8	1.8
65°	3.5	2.7	2.7	2.2	2.2	1.8	1.8	1.8
67.5°	3.1	2.7	2.7	2.2	1.8	1.8	1.3	1.3
70°	3.1	2.7	2.2	2.2	1.8	1.8	1.3	1.3
72.5°	3.1	2.7	2.2	2.2	1.8	1.3	1.3	1.3
75°	3.1	2.2	2.2	2.2	1.8	1.3	1.3	1.3
77.5°	2.7	2.2	2.2	2.2	1.8	1.3	1.3	1.3
80°	2.7	2.2	2.2	2.2	1.8	1.3	1.3	1.3
82.5°	2.7	2.2	2.2	1.8	1.8	1.3	1.3	1.3
85°	2.7	2.2	1.8	1.8	1.3	1.3	1.3	1.3
87.5°	2.7	1.8	1.8	1.8	1.3	1.3	1.3	1.3
90°	2.7	1.8	1.8	1.8	1.3	1.3	0.9	0.9
92.5°	2.7	2.2	2.2	1.8	1.8	1.3	1.3	1.3
95°	2.7	2.2	2.2	2.2	1.8	1.3	1.3	1.3
97.5°	2.7	2.2	2.2	2.2	1.8	1.3	1.3	1.3
100°	3.1	2.7	2.2	2.2	1.8	1.3	1.3	1.3
102.5°	3.1	2.7	2.2	2.2	1.8	1.8	1.3	1.3
105°	3.1	2.7	2.7	2.2	1.8	1.8	1.3	1.3
107.5°	3.1	2.7	2.7	2.2	2.2	1.8	1.8	1.3
110°	3.5	3.1	2.7	2.7	2.2	1.8	1.8	1.8



TEST NUMBER: P190117

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

CANDELA DISTRIBUTION (continued):

	150°	155°	157.5°	160°	165°	170°	175°	180°
112.5°	3.5	3.1	2.7	2.7	2.2	2.2	1.8	1.8
115°	4.0	3.1	3.1	3.1	2.7	2.7	2.2	2.2
117.5°	4.0	3.5	3.5	3.1	3.1	2.7	2.7	2.7
120°	4.4	4.0	3.5	3.5	3.1	3.1	2.7	2.7
122.5°	4.4	4.0	4.0	3.5	3.5	3.1	3.1	3.1
125°	4.9	4.4	4.0	4.0	3.5	3.5	3.5	3.5
127.5°	4.9	4.4	4.4	4.4	4.0	3.5	3.5	3.5
130°	5.3	4.9	4.9	4.4	4.4	4.0	4.0	4.0
132.5°	5.3	4.9	4.9	4.9	4.4	4.4	4.4	4.4
135°	5.3	5.3	5.3	4.9	4.9	4.9	4.4	4.4
137.5°	5.3	5.3	5.3	5.3	4.9	4.9	4.9	4.9
140°	5.3	5.3	5.3	5.3	5.3	5.3	4.9	4.9
142.5°	4.9	4.9	5.3	5.3	5.3	5.3	4.9	5.3
145°	4.4	4.9	4.9	4.9	4.9	4.9	4.9	4.9
147.5°	4.0	4.4	4.4	4.4	4.9	4.9	4.9	4.9
150°	3.5	4.0	4.0	4.0	4.0	4.4	4.4	4.4
152.5°	3.1	3.5	3.5	3.5	3.5	4.0	4.0	4.0
155°	3.1	3.1	3.1	3.1	3.1	3.5	3.5	3.5
157.5°	2.7	2.7	2.7	2.7	2.7	3.1	3.1	3.1
160°	3.5	3.1	2.7	2.7	2.7	2.7	2.7	2.7
162.5°	4.9	4.4	4.0	4.0	3.5	3.1	3.1	3.1
165°	7.5	6.6	6.2	6.2	5.3	5.3	4.9	4.9
167.5°	11.1	9.7	9.7	9.3	8.4	8.4	8.0	8.0
170°	15.5	14.2	13.7	13.7	12.8	12.4	12.4	12.0
172.5°	20.4	19.5	19.0	19.0	18.1	18.1	17.7	17.3
175°	26.1	25.2	24.8	24.8	23.9	23.9	23.5	23.9
177.5°	32.8	31.9	31.9	31.9	31.4	31.4	31.0	30.5
180°	39.4	39.4	39.4	39.4	39.4	39.4	39.4	39.4

(END OF REPORT)