

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: P190094

Luminaire Tested: **TRE11-LD4-20W-50-CL-BK-UNV-EDC1**

Issue Date: 3/3/2020



**Test Information**

Test Method: LM-79-08  
Report Number: P190094  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (P27861)  
Test Lab: INNOVATION CENTER(G2)  
Issue Date: 3/3/2020  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: FAIL-SAFE  
Catalog Number: TRE11-LD4-20W-50-CL-BK-UNV-EDC1  
Description: TERRAPIN 11" LED WALL MOUNT WITH OPEN CLEAR LENS, EYELID COVER AND EYELID RFL  
Light Source: (56) NICHIA 5000  
NF2L757DRT  
Ballast/Driver: OSRAM ELECTRONIC DRIVER PROGRAMMED AT 450mA  
OT40W/1

**Summary**

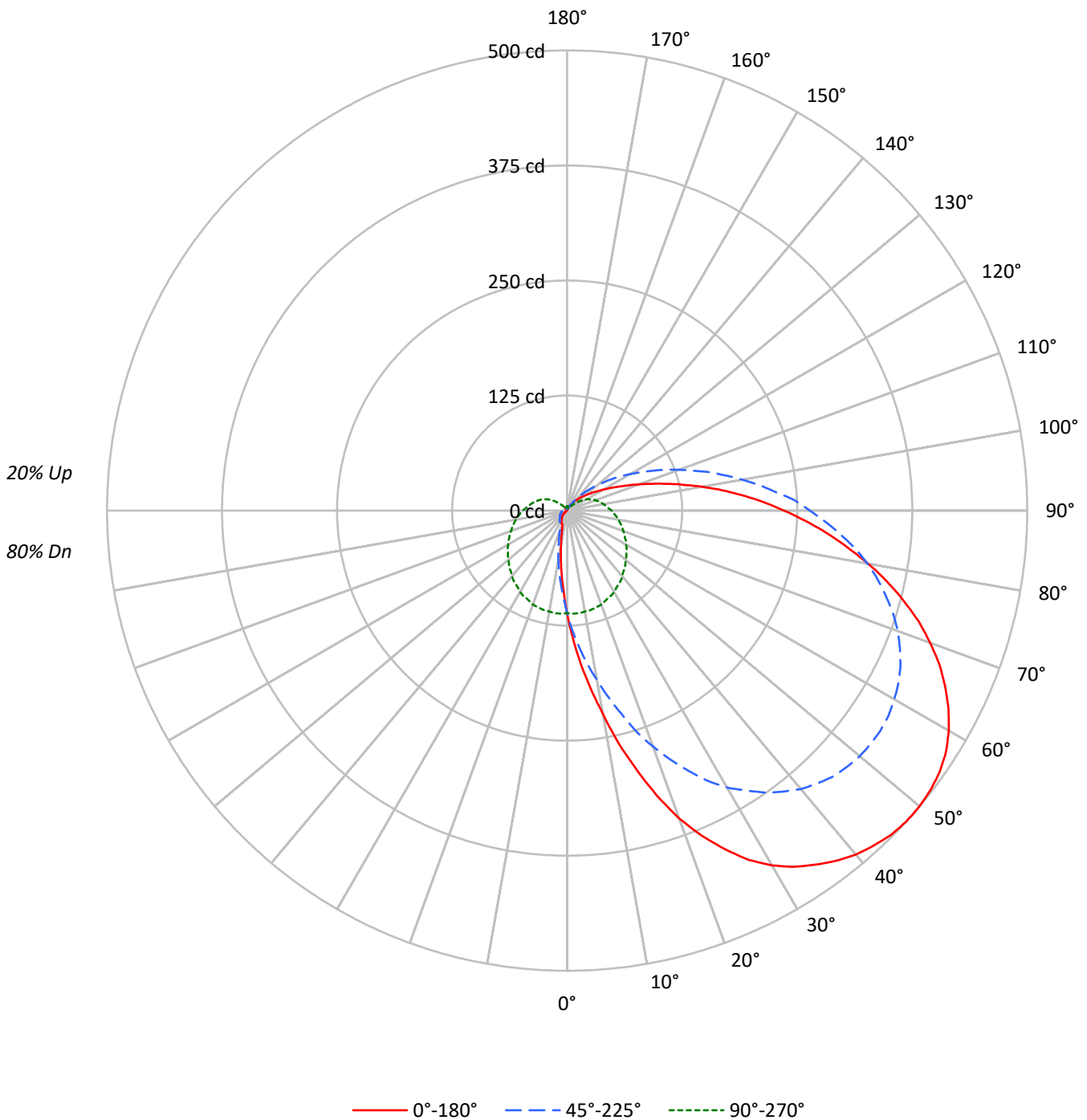
Lumens per Lamp: N/A  
Luminaire Lumens: 1285.9 lumens  
Efficiency: N/A  
Efficacy: 58.5 lumens/watt  
Spacing Criteria (0/90/45): 2.63 / 1.36 / 2.39  
Luminous Opening: Rectangular w/ Sides (W: 0.92' x L: 0.29' x H: 0.92')  
CIE Type: Semi-Direct

Input Watts (W): 22  
Input Voltage (V): NR  
Input Current (A<sub>in</sub>): 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: P190094

CATALOG NUMBER: TRE11-LD4-20W-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	114	114	114	114	109	109	109	109	100	100	100	91	91	91	84	84	84	80
1	99	92	86	80	94	88	82	77	79	75	71	72	68	65	65	62	60	56
2	88	77	68	61	83	73	65	58	66	60	54	60	54	50	54	49	46	42
3	78	66	56	48	74	62	53	46	56	49	42	51	44	39	46	40	36	33
4	71	57	46	39	67	54	44	37	49	41	34	44	37	32	39	34	29	26
5	64	50	39	32	61	47	38	31	43	35	29	39	32	26	35	29	24	21
6	59	44	34	27	56	42	33	26	38	30	24	34	28	22	31	25	21	18
7	54	39	30	23	51	38	29	22	34	26	21	31	24	19	28	22	18	15
8	50	36	26	20	47	34	25	19	31	23	18	28	21	17	25	20	15	13
9	47	32	23	17	44	31	23	17	28	21	16	26	19	15	23	18	13	11
10	44	29	21	15	41	28	20	15	26	19	14	24	17	13	21	16	12	10

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

	0°	90°	180°
0°	4481	4481	4481
5°	5262	4170	2168
10°	5903	3868	1007
15°	6584	3629	475
20°	7110	3411	310
25°	7315	3178	263
30°	7353	3012	197
35°	7214	2821	154
40°	7053	2660	118
45°	6845	2519	88
50°	6598	2372	48
55°	6323	2269	35
60°	5984	2178	22
65°	5580	2099	11
70°	5126	2035	11
75°	4626	2008	11
80°	4090	1967	11
85°	3549	1932	11



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	11.1	0.9
10°-20°	38.2	3.0
20°-30°	74.6	5.8
30°-40°	113.2	8.8
40°-50°	146.3	11.4
50°-60°	168.4	13.1
60°-70°	174.8	13.6
70°-80°	163.9	12.7
80°-90°	137.7	10.7
90°-100°	103.9	8.1
100°-110°	70.3	5.5
110°-120°	42.8	3.3
120°-130°	23.1	1.8
130°-140°	10.6	0.8
140°-150°	4.1	0.3
150°-160°	1.6	0.1
160°-170°	0.8	0.1
170°-180°	0.3	0.0
0°-30°	123.9	9.6
0°-40°	237.1	18.4
0°-60°	551.7	42.9
0°-90°	1028.2	80.0
90°-120°	217.0	16.9
90°-150°	254.9	19.8
90°-180°	258.0	20.1
0°-180°	1285.9	100.0

**CANDELA DISTRIBUTION:**

	0°	45°	90°	135°	180°	Flux
0°	111	111	111	111	111	
5°	166	149	112	79	68	18
15°	291	229	110	35	21	84
25°	406	312	105	16	15	188
35°	470	374	98	14	10	295
45°	498	409	88	11	6	385
55°	494	416	78	9	3	442
65°	453	400	69	8	1	448
75°	379	358	61	6	1	399
85°	284	298	52	6	1	241
90°	235	264	48	5	1	129
95°	191	228	44	4	1	148
105°	112	161	36	4	1	120
115°	61	102	28	4	1	62
125°	35	60	19	4	1	31
135°	19	30	9	4	2	15
145°	10	11	4	3	4	7
155°	4	5	3	3	4	2
165°	2	3	4	3	2	1
175°	2	4	5	3	2	0
180°	4	4	4	4	4	



TEST NUMBER: P190094

CATALOG NUMBER: TRE11-LD4-20W-50-CL-BK-UNV-EDC1

**CANDELA DISTRIBUTION (FULL):**

	0°	5°	10°	15°	20°	22.5°	25°	30°	35°	40°	45°
0°	111.3	111.3	111.3	111.3	111.3	111.3	111.3	111.3	111.3	111.3	111.3
2.5°	137.8	136.8	136.8	135.9	135.0	135.0	135.0	133.2	133.2	131.4	130.5
5°	166.0	164.2	163.3	162.4	160.6	160.6	158.7	156.0	155.1	151.4	148.7
7.5°	194.3	192.5	192.5	190.7	187.0	187.0	186.1	180.6	177.9	172.4	167.9
10°	224.4	221.7	221.7	218.9	214.4	213.5	211.6	206.2	200.7	194.3	187.0
12.5°	259.1	255.4	254.5	251.8	246.3	245.4	240.8	233.5	225.3	216.2	208.0
15°	291.0	290.1	287.4	284.6	278.2	275.5	270.9	262.7	253.6	241.7	229.0
17.5°	324.8	322.9	319.3	316.6	309.3	305.6	301.0	290.1	279.2	266.4	252.7
20°	355.8	353.0	350.3	345.7	337.5	333.9	328.4	315.6	303.8	289.2	272.8
22.5°	382.2	379.5	375.9	372.2	363.1	359.4	353.0	340.3	327.5	310.2	292.8
25°	406.0	405.0	400.5	396.8	387.7	383.2	377.7	364.0	349.4	332.1	312.0
27.5°	427.9	426.0	422.4	417.8	409.6	405.0	398.7	386.8	370.4	352.1	331.2
30°	445.2	443.4	440.6	435.1	426.9	422.4	416.9	404.1	386.8	368.6	347.6
32.5°	458.9	457.0	452.5	447.9	440.6	436.1	430.6	417.8	401.4	383.2	360.3
35°	469.8	468.0	465.3	459.8	452.5	448.8	443.4	430.6	415.1	396.8	374.0
37.5°	479.8	478.9	475.3	470.7	463.4	458.9	453.4	441.5	426.0	407.8	385.0
40°	488.1	486.2	483.5	478.9	471.6	467.1	462.5	450.7	435.1	416.9	395.0
42.5°	493.5	492.6	489.9	485.3	478.0	473.5	468.0	457.0	441.5	424.2	402.3
45°	498.1	497.2	493.5	489.0	482.6	478.9	473.5	461.6	447.0	429.7	408.7
47.5°	499.9	499.0	497.2	491.7	485.3	480.8	477.1	465.3	450.7	434.2	412.3
50°	499.9	499.0	497.2	492.6	486.2	481.7	478.0	467.1	452.5	436.1	415.1
52.5°	498.1	497.2	495.4	490.8	485.3	480.8	477.1	466.2	452.5	437.0	416.0
55°	494.4	493.5	490.8	488.1	481.7	478.0	473.5	464.3	451.6	436.1	416.0
57.5°	488.1	487.1	484.4	480.8	476.2	472.6	468.9	458.9	447.9	432.4	414.2
60°	478.9	478.0	475.3	472.6	467.1	464.3	461.6	452.5	441.5	427.9	410.5
62.5°	467.1	466.2	464.3	461.6	458.9	454.3	451.6	444.3	434.2	422.4	406.0
65°	453.4	453.4	451.6	448.8	446.1	442.4	440.6	434.2	426.0	414.2	399.6
67.5°	437.9	437.9	436.1	434.2	431.5	428.8	427.9	422.4	415.1	405.0	391.4
70°	419.6	419.6	418.7	416.9	416.0	413.3	411.4	407.8	402.3	394.1	382.2
72.5°	400.5	400.5	399.6	397.7	397.7	395.9	395.0	393.2	387.7	381.3	371.3
75°	378.6	379.5	378.6	377.7	377.7	376.8	376.8	374.9	372.2	367.6	358.5
77.5°	355.8	357.6	356.7	356.7	357.6	356.7	356.7	357.6	355.8	352.1	345.7
80°	332.1	333.9	333.0	333.0	334.8	335.7	336.6	337.5	337.5	336.6	331.2
82.5°	307.4	309.3	309.3	310.2	312.0	312.9	314.7	317.5	318.4	318.4	315.6
85°	283.7	284.6	284.6	286.5	289.2	291.0	292.8	296.5	298.3	300.1	298.3
87.5°	259.1	260.0	260.9	262.7	267.3	268.2	270.0	275.5	278.2	281.0	281.0
90°	235.4	235.4	236.3	239.9	242.7	246.3	248.1	254.5	258.2	261.8	263.6
92.5°	213.5	211.6	213.5	217.1	221.7	224.4	227.2	232.6	239.9	245.4	248.1
95°	190.7	190.7	191.6	195.2	200.7	203.4	206.2	212.6	218.9	224.4	228.1
97.5°	169.7	168.8	170.6	175.2	180.6	183.4	186.1	193.4	199.8	206.2	210.7
100°	148.7	147.8	150.5	156.0	161.5	164.2	166.9	174.2	181.5	187.9	193.4
102.5°	129.5	129.5	132.3	136.8	142.3	146.0	149.6	156.0	163.3	170.6	176.1
105°	112.2	112.2	114.9	120.4	125.9	128.6	132.3	139.6	146.9	153.3	160.6
107.5°	96.7	96.7	99.4	104.9	110.4	113.1	116.8	124.1	131.4	137.8	144.1
110°	83.0	83.0	85.8	90.3	96.7	99.4	103.1	109.5	115.9	124.1	129.5



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CATALOG NUMBER: TRE11-LD4-20W-50-CL-BK-UNV-EDC1

**CANDELA DISTRIBUTION (continued):**

	0°	5°	10°	15°	20°	22.5°	25°	30°	35°	40°	45°
112.5°	71.2	72.1	73.9	78.5	83.9	86.7	90.3	96.7	103.1	110.4	115.9
115°	61.1	62.0	63.9	68.4	73.9	75.7	79.4	84.8	91.2	97.6	102.2
117.5°	52.9	52.9	55.6	59.3	63.9	66.6	69.3	74.8	80.3	85.8	90.3
120°	45.6	46.5	48.3	51.1	55.6	57.5	60.2	65.7	70.2	75.7	79.4
122.5°	39.2	40.1	42.0	44.7	48.3	50.2	52.0	56.6	61.1	65.7	69.3
125°	34.7	34.7	36.5	38.3	42.0	43.8	45.6	49.3	53.8	57.5	60.2
127.5°	29.2	30.1	31.0	32.8	35.6	37.4	39.2	42.9	45.6	49.3	51.1
130°	25.5	26.5	27.4	29.2	31.0	32.8	33.8	36.5	39.2	42.0	43.8
132.5°	22.8	22.8	23.7	24.6	27.4	28.3	29.2	31.0	32.8	34.7	36.5
135°	19.2	20.1	20.1	21.9	22.8	23.7	24.6	26.5	27.4	29.2	30.1
137.5°	16.4	16.4	17.3	18.2	19.2	20.1	21.0	21.9	22.8	23.7	23.7
140°	14.6	14.6	15.5	15.5	16.4	16.4	17.3	18.2	18.2	19.2	19.2
142.5°	12.8	12.8	12.8	12.8	13.7	13.7	13.7	14.6	14.6	14.6	14.6
145°	10.0	10.0	10.9	10.9	10.9	10.9	10.9	11.9	11.9	11.9	10.9
147.5°	8.2	8.2	9.1	9.1	9.1	9.1	9.1	9.1	9.1	9.1	8.2
150°	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	6.4	6.4
152.5°	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
155°	3.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6
157.5°	2.7	2.7	2.7	2.7	3.6	3.6	3.6	3.6	3.6	3.6	3.6
160°	1.8	1.8	1.8	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7
162.5°	1.8	1.8	1.8	1.8	2.7	2.7	2.7	2.7	2.7	2.7	3.6
165°	1.8	1.8	1.8	1.8	2.7	2.7	2.7	2.7	2.7	2.7	2.7
167.5°	1.8	1.8	1.8	1.8	2.7	2.7	2.7	2.7	2.7	2.7	3.6
170°	1.8	1.8	1.8	2.7	2.7	2.7	2.7	2.7	2.7	3.6	3.6
172.5°	1.8	1.8	1.8	2.7	2.7	2.7	2.7	2.7	3.6	3.6	3.6
175°	1.8	1.8	1.8	1.8	2.7	2.7	2.7	2.7	3.6	3.6	3.6
177.5°	1.8	1.8	1.8	1.8	2.7	2.7	2.7	2.7	2.7	3.6	3.6
180°	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6



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CATALOG NUMBER: TRE11-LD4-20W-50-CL-BK-UNV-EDC1

**CANDELA DISTRIBUTION (continued):**

	50°	55°	60°	65°	67.5°	70°	75°	80°	85°	90°	95°
0°	111.3	111.3	111.3	111.3	111.3	111.3	111.3	111.3	111.3	111.3	111.3
2.5°	127.7	126.8	125.0	123.2	121.3	120.4	118.6	116.8	114.0	112.2	109.5
5°	144.1	141.4	137.8	133.2	131.4	129.5	125.0	120.4	116.8	112.2	107.6
7.5°	161.5	156.9	150.5	144.1	141.4	137.8	131.4	125.0	118.6	112.2	105.8
10°	178.8	171.5	163.3	155.1	150.5	146.0	136.8	128.6	119.5	111.3	103.1
12.5°	197.0	187.0	176.1	165.1	159.6	154.2	143.2	132.3	121.3	111.3	101.3
15°	215.3	203.4	189.8	176.1	169.7	162.4	148.7	135.9	122.2	110.4	98.5
17.5°	235.4	219.9	203.4	187.0	178.8	170.6	155.1	138.7	124.1	109.5	95.8
20°	254.5	235.4	215.3	196.1	187.0	177.9	159.6	141.4	124.1	108.6	93.1
22.5°	271.9	251.8	227.2	206.2	195.2	184.3	164.2	144.1	125.0	106.7	90.3
25°	289.2	267.3	242.7	215.3	203.4	191.6	167.9	146.0	125.0	104.9	87.6
27.5°	306.5	281.0	254.5	225.3	211.6	198.0	172.4	147.8	125.0	104.0	84.8
30°	322.0	294.7	265.5	234.5	218.9	204.3	176.1	149.6	125.0	102.2	82.1
32.5°	334.8	305.6	274.6	242.7	225.3	209.8	178.8	150.5	124.1	99.4	78.5
35°	347.6	317.5	284.6	250.9	232.6	214.4	181.5	151.4	123.2	97.6	75.7
37.5°	358.5	327.5	293.7	257.3	239.0	218.9	183.4	151.4	122.2	95.8	73.0
40°	367.6	336.6	301.0	263.6	244.5	222.6	185.2	151.4	120.4	93.1	70.2
42.5°	375.9	343.9	308.3	268.2	248.1	226.2	187.0	151.4	118.6	90.3	66.6
45°	382.2	350.3	313.8	272.8	251.8	229.9	187.9	150.5	116.8	88.5	63.9
47.5°	386.8	355.8	318.4	277.3	255.4	232.6	188.8	149.6	115.9	85.8	61.1
50°	389.5	359.4	322.0	280.1	257.3	233.5	188.8	148.7	113.1	83.0	59.3
52.5°	391.4	361.3	324.8	281.9	259.1	234.5	188.8	147.8	111.3	81.2	56.6
55°	392.3	363.1	326.6	283.7	260.0	236.3	187.9	146.0	109.5	78.5	53.8
57.5°	390.4	362.2	326.6	283.7	260.9	235.4	187.0	144.1	106.7	76.6	52.0
60°	387.7	360.3	325.7	283.7	260.0	234.5	186.1	142.3	104.9	73.9	50.2
62.5°	385.0	357.6	323.9	281.9	259.1	233.5	184.3	139.6	102.2	72.1	47.4
65°	379.5	354.0	321.1	280.1	257.3	230.8	182.5	137.8	100.3	69.3	45.6
67.5°	373.1	348.5	317.5	277.3	254.5	228.1	179.7	135.0	97.6	67.5	43.8
70°	364.9	342.1	312.9	273.7	251.8	225.3	177.0	132.3	94.9	64.8	42.0
72.5°	355.8	335.7	306.5	269.1	247.2	221.7	174.2	130.5	93.1	62.9	40.1
75°	345.7	326.6	299.2	263.6	242.7	218.0	170.6	127.7	90.3	61.1	38.3
77.5°	334.8	316.6	291.9	258.2	237.2	213.5	166.9	125.0	88.5	58.4	36.5
80°	322.0	305.6	282.8	250.9	229.9	208.0	163.3	121.3	85.8	56.6	34.7
82.5°	307.4	293.7	272.8	243.6	222.6	202.5	158.7	117.7	83.0	54.7	33.8
85°	292.8	281.0	262.7	233.5	215.3	196.1	154.2	114.9	80.3	52.0	31.9
87.5°	277.3	268.2	250.9	223.5	207.1	188.8	149.6	110.4	77.5	50.2	30.1
90°	260.9	253.6	238.1	214.4	198.9	182.5	144.1	106.7	74.8	48.3	28.3
92.5°	246.3	239.9	225.3	203.4	189.8	174.2	137.8	103.1	71.2	45.6	27.4
95°	228.1	223.5	212.6	193.4	180.6	166.0	133.2	98.5	68.4	43.8	25.5
97.5°	211.6	208.9	199.8	182.5	171.5	157.8	126.8	94.9	65.7	42.0	24.6
100°	196.1	193.4	186.1	171.5	161.5	148.7	120.4	91.2	62.9	40.1	23.7
102.5°	178.8	177.9	172.4	159.6	150.5	139.6	114.0	86.7	60.2	38.3	21.9
105°	163.3	163.3	158.7	147.8	139.6	130.5	107.6	82.1	57.5	36.5	21.0
107.5°	147.8	148.7	145.0	135.9	128.6	120.4	99.4	76.6	53.8	34.7	20.1
110°	133.2	134.1	131.4	124.1	117.7	110.4	92.1	72.1	51.1	32.8	19.2





TEST NUMBER: P190094

CATALOG NUMBER: TRE11-LD4-20W-50-CL-BK-UNV-EDC1

**CANDELA DISTRIBUTION (continued):**

	50°	55°	60°	65°	67.5°	70°	75°	80°	85°	90°	95°
112.5°	119.5	119.5	118.6	112.2	106.7	100.3	84.8	65.7	47.4	31.0	17.3
115°	105.8	106.7	105.8	100.3	95.8	90.3	76.6	60.2	43.8	28.3	16.4
117.5°	94.0	94.9	94.0	89.4	84.8	80.3	69.3	54.7	40.1	26.5	15.5
120°	82.1	83.0	82.1	78.5	74.8	71.2	61.1	49.3	36.5	24.6	14.6
122.5°	71.2	72.1	71.2	67.5	64.8	61.1	52.9	42.9	31.9	21.9	12.8
125°	62.0	62.0	61.1	57.5	55.6	52.9	45.6	37.4	28.3	19.2	11.9
127.5°	52.0	52.0	51.1	48.3	46.5	44.7	38.3	31.9	23.7	16.4	10.0
130°	43.8	43.8	42.9	40.1	38.3	36.5	31.9	26.5	20.1	13.7	8.2
132.5°	37.4	36.5	35.6	33.8	31.9	30.1	26.5	21.9	16.4	11.9	7.3
135°	30.1	29.2	28.3	26.5	24.6	23.7	21.0	17.3	12.8	9.1	5.5
137.5°	23.7	22.8	21.9	21.0	19.2	18.2	16.4	12.8	10.0	7.3	4.6
140°	19.2	18.2	17.3	16.4	15.5	13.7	11.9	10.0	7.3	5.5	3.6
142.5°	14.6	13.7	12.8	11.9	10.9	10.0	9.1	7.3	5.5	4.6	2.7
145°	10.9	10.0	10.0	9.1	8.2	7.3	6.4	5.5	4.6	3.6	2.7
147.5°	8.2	7.3	7.3	6.4	6.4	5.5	4.6	4.6	3.6	2.7	2.7
150°	6.4	6.4	5.5	5.5	4.6	4.6	3.6	3.6	3.6	2.7	2.7
152.5°	4.6	4.6	4.6	4.6	3.6	3.6	3.6	3.6	2.7	2.7	2.7
155°	3.6	3.6	3.6	3.6	3.6	3.6	3.6	2.7	2.7	2.7	2.7
157.5°	3.6	3.6	3.6	3.6	3.6	3.6	3.6	2.7	2.7	2.7	2.7
160°	3.6	3.6	3.6	3.6	3.6	3.6	2.7	2.7	2.7	2.7	2.7
162.5°	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6
165°	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6
167.5°	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6
170°	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6
172.5°	3.6	3.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6
175°	3.6	3.6	3.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6
177.5°	3.6	3.6	3.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6
180°	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6



TEST NUMBER: P190094

CATALOG NUMBER: TRE11-LD4-20W-50-CL-BK-UNV-EDC1

**CANDELA DISTRIBUTION (continued):**

	100°	105°	110°	112.5°	115°	120°	125°	130°	135°	140°	145°
0°	111.3	111.3	111.3	111.3	111.3	111.3	111.3	111.3	111.3	111.3	111.3
2.5°	107.6	104.9	104.0	102.2	101.3	99.4	97.6	95.8	93.1	92.1	91.2
5°	104.0	99.4	95.8	94.0	92.1	88.5	84.8	82.1	79.4	76.6	74.8
7.5°	99.4	94.0	88.5	85.8	83.9	78.5	73.9	70.2	66.6	62.9	60.2
10°	95.8	87.6	81.2	77.5	74.8	69.3	63.9	59.3	54.7	51.1	47.4
12.5°	91.2	83.0	74.8	70.2	67.5	60.2	54.7	49.3	43.8	40.1	36.5
15°	87.6	77.5	68.4	63.9	60.2	52.9	46.5	40.1	34.7	31.9	28.3
17.5°	83.9	73.0	62.9	58.4	53.8	45.6	39.2	32.8	28.3	24.6	22.8
20°	79.4	67.5	57.5	52.0	47.4	39.2	31.9	27.4	22.8	20.1	18.2
22.5°	75.7	62.9	52.0	46.5	41.1	32.8	26.5	21.9	19.2	17.3	16.4
25°	72.1	58.4	46.5	41.1	36.5	28.3	22.8	19.2	16.4	15.5	15.5
27.5°	68.4	53.8	42.0	36.5	31.9	24.6	19.2	16.4	15.5	15.5	15.5
30°	64.8	50.2	37.4	32.8	27.4	21.0	17.3	15.5	15.5	15.5	14.6
32.5°	61.1	46.5	33.8	28.3	24.6	18.2	15.5	14.6	14.6	14.6	13.7
35°	57.5	42.9	30.1	25.5	21.9	16.4	14.6	14.6	13.7	13.7	12.8
37.5°	53.8	39.2	27.4	22.8	19.2	14.6	14.6	13.7	13.7	12.8	11.9
40°	51.1	35.6	24.6	20.1	17.3	13.7	13.7	12.8	12.8	11.9	10.9
42.5°	48.3	32.8	21.9	18.2	15.5	12.8	12.8	11.9	11.9	10.9	10.0
45°	44.7	30.1	19.2	16.4	13.7	12.8	11.9	11.9	10.9	10.0	10.0
47.5°	42.0	27.4	17.3	14.6	11.9	11.9	11.9	10.9	10.9	10.0	9.1
50°	40.1	25.5	15.5	12.8	10.9	10.9	10.9	10.0	10.0	9.1	8.2
52.5°	37.4	22.8	14.6	11.9	10.9	10.9	10.0	10.0	10.0	9.1	8.2
55°	35.6	21.0	12.8	10.9	10.0	10.0	10.0	10.0	9.1	8.2	7.3
57.5°	32.8	19.2	11.9	10.0	10.0	10.0	10.0	9.1	9.1	8.2	6.4
60°	31.0	18.2	10.9	9.1	9.1	9.1	10.0	9.1	8.2	7.3	6.4
62.5°	29.2	16.4	10.0	9.1	9.1	9.1	9.1	9.1	8.2	7.3	5.5
65°	27.4	15.5	9.1	8.2	9.1	9.1	9.1	9.1	8.2	6.4	5.5
67.5°	26.5	14.6	8.2	8.2	9.1	9.1	9.1	8.2	7.3	6.4	4.6
70°	24.6	13.7	8.2	8.2	8.2	8.2	9.1	8.2	7.3	5.5	4.6
72.5°	22.8	12.8	7.3	8.2	8.2	8.2	8.2	8.2	6.4	5.5	3.6
75°	21.9	11.9	7.3	7.3	8.2	8.2	8.2	7.3	6.4	4.6	3.6
77.5°	21.0	10.9	7.3	7.3	8.2	8.2	8.2	7.3	6.4	4.6	3.6
80°	19.2	10.0	7.3	7.3	7.3	7.3	7.3	7.3	5.5	4.6	2.7
82.5°	18.2	9.1	6.4	7.3	7.3	7.3	7.3	6.4	5.5	4.6	2.7
85°	17.3	9.1	6.4	6.4	7.3	7.3	7.3	6.4	5.5	3.6	2.7
87.5°	16.4	8.2	5.5	6.4	6.4	6.4	6.4	5.5	4.6	3.6	1.8
90°	14.6	7.3	5.5	5.5	5.5	6.4	6.4	5.5	4.6	2.7	1.8
92.5°	13.7	7.3	5.5	5.5	5.5	6.4	6.4	5.5	4.6	2.7	1.8
95°	13.7	6.4	5.5	5.5	5.5	6.4	6.4	5.5	3.6	2.7	1.8
97.5°	12.8	6.4	4.6	5.5	5.5	5.5	5.5	5.5	3.6	2.7	1.8
100°	11.9	5.5	4.6	4.6	5.5	5.5	5.5	4.6	3.6	2.7	1.8
102.5°	10.9	5.5	4.6	4.6	4.6	5.5	5.5	4.6	3.6	2.7	1.8
105°	10.0	4.6	4.6	4.6	4.6	4.6	5.5	4.6	3.6	2.7	1.8
107.5°	10.0	4.6	3.6	3.6	4.6	4.6	4.6	4.6	3.6	2.7	1.8
110°	9.1	4.6	3.6	3.6	3.6	4.6	4.6	4.6	3.6	2.7	1.8



TEST NUMBER: P190094

CATALOG NUMBER: TRE11-LD4-20W-50-CL-BK-UNV-EDC1

**CANDELA DISTRIBUTION (continued):**

	100°	105°	110°	112.5°	115°	120°	125°	130°	135°	140°	145°
112.5°	8.2	3.6	3.6	3.6	3.6	4.6	4.6	3.6	3.6	2.7	1.8
115°	8.2	3.6	3.6	3.6	3.6	3.6	4.6	4.6	3.6	2.7	1.8
117.5°	8.2	3.6	3.6	3.6	3.6	3.6	4.6	4.6	3.6	2.7	1.8
120°	7.3	3.6	3.6	3.6	3.6	3.6	4.6	4.6	3.6	2.7	2.7
122.5°	6.4	3.6	2.7	2.7	3.6	3.6	3.6	3.6	3.6	2.7	2.7
125°	6.4	3.6	2.7	2.7	2.7	3.6	3.6	3.6	3.6	3.6	2.7
127.5°	5.5	2.7	2.7	2.7	2.7	3.6	3.6	3.6	3.6	3.6	2.7
130°	4.6	2.7	2.7	2.7	2.7	2.7	3.6	3.6	3.6	3.6	2.7
132.5°	3.6	2.7	2.7	2.7	2.7	2.7	3.6	3.6	3.6	3.6	3.6
135°	3.6	2.7	2.7	2.7	2.7	2.7	2.7	3.6	3.6	3.6	3.6
137.5°	2.7	2.7	2.7	2.7	2.7	2.7	2.7	3.6	3.6	3.6	3.6
140°	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	3.6	3.6	3.6
142.5°	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	3.6	3.6	3.6
145°	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	3.6	3.6
147.5°	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	3.6
150°	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7
152.5°	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7
155°	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7
157.5°	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	1.8	2.7	2.7
160°	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7
162.5°	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7
165°	3.6	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7
167.5°	3.6	3.6	3.6	3.6	2.7	2.7	2.7	2.7	2.7	2.7	2.7
170°	3.6	3.6	3.6	3.6	3.6	3.6	2.7	2.7	2.7	2.7	2.7
172.5°	3.6	3.6	3.6	3.6	3.6	3.6	3.6	2.7	2.7	2.7	2.7
175°	4.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	2.7	2.7	2.7
177.5°	4.6	4.6	3.6	3.6	3.6	3.6	3.6	3.6	2.7	2.7	2.7
180°	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6



TEST NUMBER: P190094

CATALOG NUMBER: TRE11-LD4-20W-50-CL-BK-UNV-EDC1

**CANDELA DISTRIBUTION (continued):**

	150°	155°	157.5°	160°	165°	170°	175°	180°
0°	111.3	111.3	111.3	111.3	111.3	111.3	111.3	111.3
2.5°	90.3	88.5	88.5	88.5	86.7	86.7	86.7	87.6
5°	73.0	71.2	70.2	70.2	68.4	68.4	68.4	68.4
7.5°	58.4	56.6	54.7	54.7	52.9	52.0	52.0	52.0
10°	44.7	42.9	41.1	40.1	39.2	38.3	37.4	38.3
12.5°	33.8	31.9	31.0	30.1	29.2	28.3	27.4	27.4
15°	25.5	23.7	23.7	22.8	21.9	21.0	21.0	21.0
17.5°	21.0	19.2	18.2	18.2	17.3	17.3	17.3	17.3
20°	17.3	16.4	16.4	16.4	15.5	16.4	16.4	15.5
22.5°	15.5	15.5	15.5	15.5	15.5	15.5	15.5	15.5
25°	15.5	15.5	15.5	14.6	14.6	14.6	14.6	14.6
27.5°	14.6	14.6	14.6	13.7	13.7	13.7	12.8	12.8
30°	13.7	13.7	12.8	12.8	12.8	11.9	11.9	11.9
32.5°	12.8	11.9	11.9	11.9	11.9	10.9	10.9	10.9
35°	11.9	11.9	10.9	10.9	10.9	10.0	10.0	10.0
37.5°	10.9	10.9	10.9	10.0	10.0	9.1	9.1	9.1
40°	10.9	10.0	10.0	9.1	9.1	8.2	8.2	8.2
42.5°	10.0	9.1	9.1	8.2	8.2	7.3	7.3	7.3
45°	9.1	8.2	8.2	7.3	7.3	6.4	6.4	6.4
47.5°	8.2	7.3	7.3	6.4	6.4	5.5	5.5	4.6
50°	7.3	6.4	6.4	5.5	4.6	4.6	3.6	3.6
52.5°	7.3	5.5	5.5	4.6	4.6	3.6	3.6	2.7
55°	6.4	5.5	4.6	3.6	3.6	2.7	2.7	2.7
57.5°	5.5	4.6	3.6	3.6	2.7	1.8	1.8	1.8
60°	4.6	3.6	3.6	2.7	1.8	1.8	1.8	1.8
62.5°	4.6	3.6	2.7	2.7	1.8	1.8	0.9	0.9
65°	3.6	2.7	2.7	1.8	1.8	0.9	0.9	0.9
67.5°	3.6	2.7	1.8	1.8	0.9	0.9	0.9	0.9
70°	2.7	1.8	1.8	1.8	0.9	0.9	0.9	0.9
72.5°	2.7	1.8	1.8	1.8	0.9	0.9	0.9	0.9
75°	2.7	1.8	1.8	0.9	0.9	0.9	0.9	0.9
77.5°	2.7	1.8	1.8	1.8	1.8	0.9	0.9	0.9
80°	1.8	1.8	0.9	0.9	0.9	0.9	0.9	0.9
82.5°	1.8	1.8	1.8	1.8	0.9	0.9	0.9	0.9
85°	1.8	0.9	0.9	0.9	0.9	0.9	0.9	0.9
87.5°	1.8	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°	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
95°	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
97.5°	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
100°	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
102.5°	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
105°	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
107.5°	0.9	0.9	0.9	0.9	0.9	0.0	0.0	0.9
110°	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9



TEST NUMBER: P190094

CATALOG NUMBER: TRE11-LD4-20W-50-CL-BK-UNV-EDC1

**CANDELA DISTRIBUTION (continued):**

	150°	155°	157.5°	160°	165°	170°	175°	180°
112.5°	0.9	0.9	0.9	0.9	0.9	0.0	0.0	0.0
115°	1.8	0.9	0.9	0.9	0.9	0.9	0.9	0.9
117.5°	1.8	0.9	0.9	0.9	0.9	0.9	0.9	0.9
120°	1.8	1.8	1.8	0.9	0.9	0.9	0.9	0.9
122.5°	1.8	1.8	1.8	1.8	0.9	0.9	0.9	0.9
125°	1.8	1.8	1.8	1.8	1.8	0.9	0.9	0.9
127.5°	1.8	1.8	1.8	1.8	1.8	0.9	0.9	0.9
130°	2.7	1.8	1.8	1.8	1.8	1.8	1.8	1.8
132.5°	2.7	2.7	2.7	1.8	1.8	1.8	1.8	1.8
135°	2.7	2.7	2.7	2.7	1.8	1.8	1.8	1.8
137.5°	3.6	2.7	2.7	2.7	2.7	1.8	1.8	1.8
140°	3.6	3.6	3.6	2.7	2.7	2.7	2.7	2.7
142.5°	3.6	3.6	3.6	3.6	3.6	2.7	2.7	2.7
145°	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6
147.5°	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6
150°	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6
152.5°	2.7	3.6	3.6	3.6	3.6	3.6	3.6	3.6
155°	2.7	2.7	2.7	2.7	2.7	2.7	2.7	3.6
157.5°	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7
160°	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7
162.5°	2.7	2.7	2.7	2.7	2.7	2.7	1.8	2.7
165°	2.7	1.8	1.8	1.8	1.8	1.8	1.8	1.8
167.5°	2.7	1.8	1.8	1.8	1.8	1.8	1.8	1.8
170°	2.7	2.7	2.7	2.7	1.8	1.8	1.8	1.8
172.5°	2.7	2.7	2.7	2.7	1.8	1.8	1.8	1.8
175°	2.7	2.7	2.7	2.7	1.8	1.8	1.8	1.8
177.5°	2.7	2.7	2.7	2.7	1.8	1.8	1.8	1.8
180°	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6

(END OF REPORT)