

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: P190109

Luminaire Tested: **TRB11-LD4-20W-50-CL-BK-UNV-EDC1-CSTG**

Issue Date: 3/3/2020



**Test Information**

Test Method: LM-79-08  
Report Number: P190109  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (P27870)  
Test Lab: INNOVATION CENTER(G2)  
Issue Date: 3/3/2020  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: FAIL-SAFE  
Catalog Number: TRB11-LD4-20W-50-CL-BK-UNV-EDC1-CSTG  
Description: TERRAPIN 11" LED SHALLOW CAST WALL MOUNT WITH BORDER PAINTED CLEAR LENS  
Light Source: (56) NICHIA 5000 NF2L757DRT  
Ballast/Driver: OSRAM ELECTRONIC DRIVER PROGRAMMED AT 450mA OT40W/1

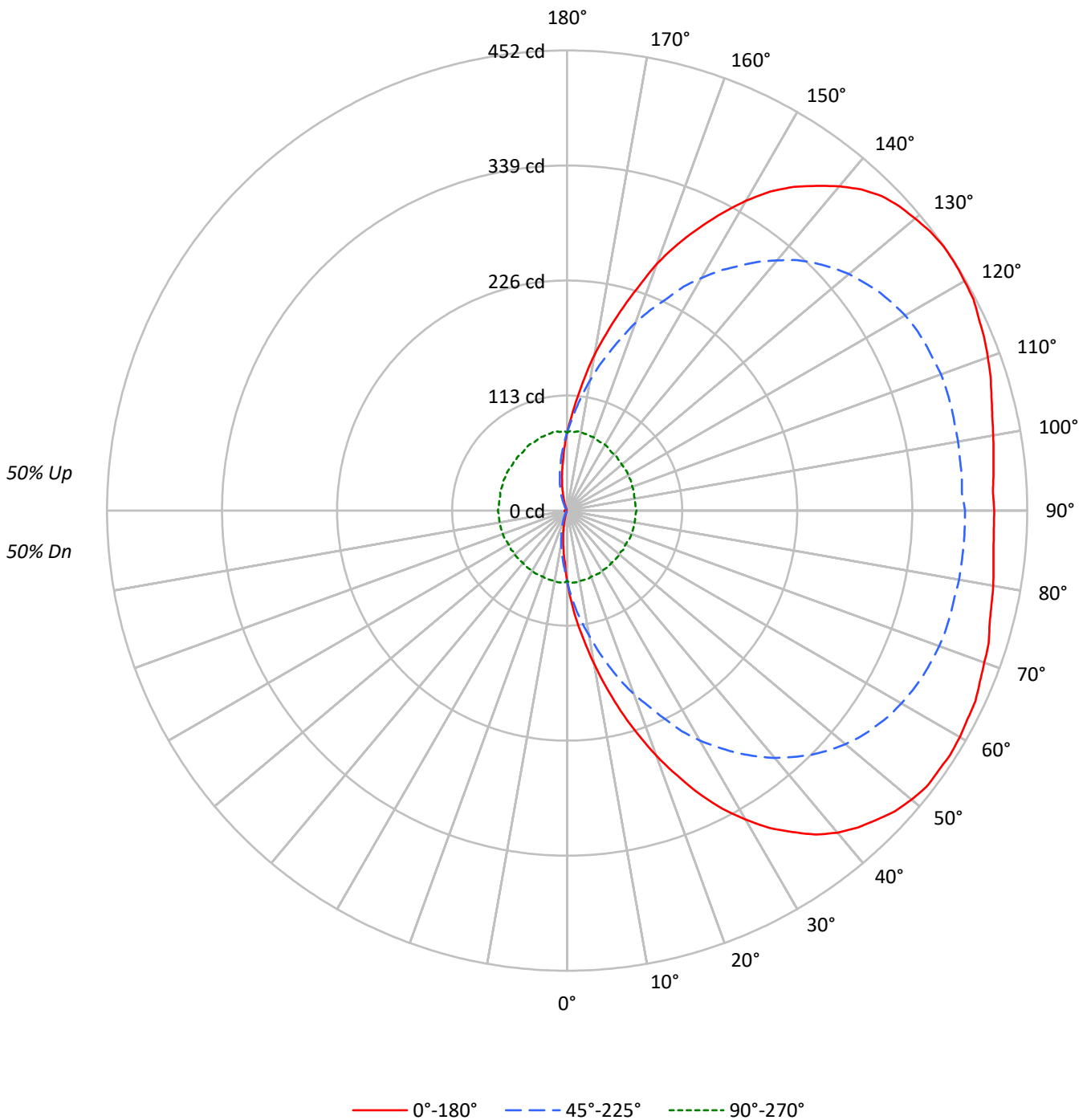
**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 1960.9 lumens  
Efficiency: N/A  
Efficacy: 89.5 lumens/watt  
Spacing Criteria (0/90/45): 3.15 / 1.51 / 2.83  
Luminous Opening: Rectangular w/ Sides (W: 0.92' x L: 0.29' x H: 0.92')  
CIE Type: General Diffuse  
  
Input Watts (W): 21.9  
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

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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	50	48	42	40	38	32
2	83	73	65	58	75	67	60	53	55	49	45	44	40	36	34	31	28	23
3	74	63	53	46	67	57	49	43	47	41	35	37	33	29	29	25	22	17
4	67	54	45	38	61	50	41	35	41	34	29	32	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	17	13	10	8
8	48	34	25	20	43	31	23	18	26	19	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°	2782	2782	2782
5°	3449	2639	1255
10°	4025	2436	581
15°	4611	2304	208
20°	5122	2170	74
25°	5531	2093	16
30°	5786	2010	15
35°	5918	1971	14
40°	5968	1923	13
45°	5904	1916	12
50°	5828	1923	12
55°	5695	1945	23
60°	5565	1957	22
65°	5446	2039	22
70°	5328	2114	22
75°	5250	2212	22
80°	5235	2339	22
85°	5259	2501	23



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	7.1	0.4
10°-20°	25.6	1.3
20°-30°	53.1	2.7
30°-40°	87.0	4.4
40°-50°	120.6	6.2
50°-60°	148.5	7.6
60°-70°	168.3	8.6
70°-80°	179.9	9.2
80°-90°	184.7	9.4
90°-100°	184.2	9.4
100°-110°	180.3	9.2
110°-120°	170.0	8.7
120°-130°	150.8	7.7
130°-140°	122.7	6.3
140°-150°	88.6	4.5
150°-160°	54.7	2.8
160°-170°	27.0	1.4
170°-180°	7.7	0.4
0°-30°	85.8	4.4
0°-40°	172.9	8.8
0°-60°	442.0	22.5
0°-90°	974.8	49.7
90°-120°	534.5	27.3
90°-150°	896.6	45.7
90°-180°	986.0	50.3
0°-180°	1960.9	100.0

**CANDELA DISTRIBUTION:**

	0°	45°	90°	135°	180°	Flux
0°	69	69	69	69	69	
5°	109	97	71	49	40	12
15°	204	158	70	21	9	59
25°	307	225	69	6	1	143
35°	385	290	68	2	1	242
45°	430	339	67	2	1	333
55°	445	370	67	2	2	399
65°	442	385	67	2	2	438
75°	430	390	67	2	2	455
85°	420	391	67	2	2	344
90°	420	391	68	2	2	230
95°	420	389	67	2	2	344
105°	432	391	68	2	2	457
115°	446	388	69	2	2	443
125°	452	374	70	2	2	404
135°	437	344	71	2	1	337
145°	388	293	73	2	1	243
155°	306	229	75	9	1	143
165°	203	161	77	28	14	59
175°	110	100	77	57	48	12
180°	76	76	76	76	76	



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**CANDELA DISTRIBUTION (FULL):**

	0°	5°	10°	15°	20°	22.5°	25°	30°	35°	40°	45°
0°	69.1	69.1	69.1	69.1	69.1	69.1	69.1	69.1	69.1	69.1	69.1
2.5°	88.5	86.7	87.6	86.7	87.6	86.7	86.7	84.8	85.7	84.8	83.0
5°	108.8	106.9	106.9	106.0	106.0	105.1	105.1	102.3	101.4	99.6	96.8
7.5°	129.1	128.2	128.2	126.3	125.4	124.5	123.5	119.9	117.1	115.2	110.6
10°	153.0	150.3	149.4	148.4	146.6	144.7	143.8	138.3	134.6	130.9	124.5
12.5°	177.9	175.2	174.3	172.4	169.6	166.9	165.0	159.5	154.0	148.4	141.1
15°	203.8	201.0	200.1	197.3	193.6	190.8	188.1	181.6	174.3	166.9	157.7
17.5°	229.6	228.6	225.9	223.1	217.6	214.8	211.1	202.8	195.5	185.3	175.2
20°	256.3	255.4	253.5	249.9	243.4	240.6	235.1	225.0	215.7	203.8	191.8
22.5°	281.2	280.3	277.5	273.8	267.4	263.7	259.1	248.9	236.9	222.2	207.4
25°	307.0	306.1	302.4	297.8	290.4	286.7	282.1	270.1	258.1	243.4	225.0
27.5°	330.1	329.1	325.5	320.8	313.5	308.9	303.3	291.3	277.5	262.8	244.3
30°	350.3	349.4	345.7	341.1	332.8	329.1	322.7	310.7	295.9	279.4	260.9
32.5°	369.7	367.9	365.1	358.6	351.3	346.7	340.2	328.2	313.5	295.0	275.7
35°	385.4	384.5	381.7	375.2	367.9	363.3	356.8	343.9	329.1	309.8	290.4
37.5°	401.1	399.2	396.4	390.9	382.6	378.9	372.5	358.6	343.9	324.5	304.2
40°	413.0	411.2	408.4	402.9	395.5	390.9	384.5	372.5	356.8	338.4	317.2
42.5°	422.3	421.3	418.6	413.0	405.7	402.0	396.4	383.5	368.8	350.3	328.2
45°	429.6	429.6	427.8	422.3	414.9	411.2	405.7	393.7	378.9	360.5	339.3
47.5°	437.0	436.1	433.3	427.8	422.3	417.6	413.0	402.0	387.2	369.7	348.5
50°	441.6	440.7	437.9	433.3	426.9	423.2	418.6	408.4	394.6	378.0	356.8
52.5°	445.3	443.5	440.7	436.1	430.6	426.9	423.2	413.0	401.1	383.5	364.2
55°	445.3	444.4	442.5	437.9	432.4	428.7	425.0	415.8	404.7	389.1	369.7
57.5°	446.2	445.3	442.5	438.9	434.2	430.6	426.9	418.6	408.4	393.7	375.2
60°	445.3	444.4	441.6	438.9	433.3	430.6	427.8	419.5	410.3	396.4	378.9
62.5°	443.5	443.5	440.7	437.0	432.4	430.6	426.9	420.4	411.2	398.3	382.6
65°	442.5	441.6	438.9	435.2	431.5	428.7	425.9	420.4	411.2	400.1	385.4
67.5°	438.9	438.9	437.0	433.3	429.6	427.8	425.0	418.6	411.2	401.1	387.2
70°	436.1	436.1	434.2	431.5	427.8	425.9	423.2	417.6	411.2	402.0	389.1
72.5°	434.2	432.4	430.6	427.8	425.0	423.2	420.4	415.8	410.3	402.0	390.0
75°	429.6	428.7	426.9	425.0	421.3	420.4	418.6	414.0	408.4	401.1	390.0
77.5°	426.9	426.9	425.0	421.3	418.6	417.6	415.8	412.1	407.5	401.1	390.0
80°	425.0	424.1	422.3	419.5	416.7	415.8	414.0	410.3	406.6	401.1	390.9
82.5°	422.3	421.3	419.5	416.7	414.0	413.0	412.1	409.4	405.7	400.1	390.9
85°	420.4	419.5	417.6	415.8	413.0	412.1	410.3	408.4	404.7	400.1	390.9
87.5°	419.5	418.6	416.7	414.9	412.1	411.2	410.3	407.5	404.7	399.2	390.9
90°	419.5	418.6	416.7	414.9	413.0	412.1	411.2	408.4	405.7	400.1	390.9
92.5°	418.6	417.6	414.9	413.0	411.2	410.3	408.4	406.6	402.9	397.4	388.1
95°	420.4	419.5	417.6	414.9	413.0	412.1	410.3	407.5	404.7	398.3	389.1
97.5°	422.3	421.3	419.5	417.6	415.8	414.0	412.1	409.4	405.7	399.2	389.1
100°	425.0	425.0	422.3	420.4	417.6	415.8	414.9	411.2	406.6	400.1	390.0
102.5°	427.8	427.8	425.9	423.2	420.4	418.6	417.6	413.0	408.4	401.1	390.0
105°	431.5	430.6	429.6	426.9	424.1	422.3	420.4	415.8	410.3	402.9	390.9
107.5°	436.1	435.2	433.3	430.6	427.8	425.9	424.1	418.6	412.1	403.8	390.9
110°	439.8	439.8	437.9	435.2	431.5	429.6	426.9	421.3	414.0	403.8	390.9



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**CANDELA DISTRIBUTION (continued):**

	0°	5°	10°	15°	20°	22.5°	25°	30°	35°	40°	45°
112.5°	443.5	442.5	440.7	437.9	433.3	430.6	428.7	422.3	414.0	403.8	389.1
115°	446.2	446.2	444.4	440.7	436.1	434.2	430.6	424.1	415.8	403.8	388.1
117.5°	449.9	449.0	446.2	442.5	438.9	435.2	432.4	425.0	415.8	402.9	386.3
120°	450.8	449.9	448.1	444.4	439.8	436.1	432.4	425.0	414.0	401.1	383.5
122.5°	451.8	450.8	449.0	444.4	439.8	436.1	432.4	423.2	412.1	397.4	378.9
125°	451.8	450.8	448.1	444.4	437.9	435.2	430.6	421.3	408.4	393.7	374.3
127.5°	449.9	449.0	446.2	441.6	435.2	431.5	426.9	417.6	404.7	387.2	367.9
130°	446.2	444.4	442.5	438.9	431.5	427.8	423.2	412.1	398.3	380.8	361.4
132.5°	442.5	440.7	437.9	433.3	425.9	422.3	417.6	405.7	390.9	373.4	353.1
135°	437.0	435.2	431.5	426.9	420.4	415.8	410.3	398.3	382.6	364.2	343.9
137.5°	427.8	425.9	423.2	418.6	410.3	406.6	400.1	387.2	372.5	354.0	333.8
140°	415.8	414.0	410.3	406.6	398.3	393.7	387.2	375.2	359.6	341.1	320.8
142.5°	402.0	400.1	398.3	392.8	384.5	379.8	373.4	360.5	345.7	327.3	307.9
145°	388.1	385.4	383.5	378.0	370.6	366.0	359.6	346.7	331.0	313.5	293.2
147.5°	371.6	368.8	366.9	361.4	354.0	348.5	343.0	331.0	316.2	298.7	279.4
150°	351.3	350.3	347.6	343.0	334.7	330.1	324.5	312.5	298.7	283.0	263.7
152.5°	329.1	328.2	326.4	321.8	312.5	308.9	304.2	293.2	280.3	264.6	248.0
155°	306.1	306.1	303.3	298.7	291.3	285.8	282.1	272.9	260.0	246.2	228.6
157.5°	283.0	283.0	280.3	276.6	270.1	266.4	260.9	252.6	241.6	226.8	213.0
160°	258.1	258.1	256.3	252.6	245.2	242.5	238.8	228.6	219.4	208.4	196.4
162.5°	228.6	229.6	226.8	224.0	219.4	215.7	213.0	206.5	198.2	189.0	177.9
165°	202.8	202.8	201.9	199.1	195.5	191.8	189.0	184.4	177.0	169.6	161.3
167.5°	177.9	178.9	177.0	175.2	172.4	170.6	167.8	164.1	157.7	152.1	145.7
170°	155.8	154.0	153.0	152.1	149.4	148.4	146.6	143.8	139.2	135.5	130.0
172.5°	131.8	130.9	130.0	130.0	128.2	127.2	126.3	124.5	120.8	118.0	114.3
175°	109.7	109.7	108.8	108.8	107.9	106.9	106.0	106.0	104.2	102.3	100.5
177.5°	91.3	90.4	90.4	90.4	90.4	91.3	90.4	89.4	89.4	88.5	87.6
180°	76.5	76.5	76.5	76.5	76.5	76.5	76.5	76.5	76.5	76.5	76.5



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**CANDELA DISTRIBUTION (continued):**

	50°	55°	60°	65°	67.5°	70°	75°	80°	85°	90°	95°
0°	69.1	69.1	69.1	69.1	69.1	69.1	69.1	69.1	69.1	69.1	69.1
2.5°	82.1	81.1	80.2	79.3	78.4	77.4	76.5	74.7	72.8	71.0	69.1
5°	94.0	92.2	88.5	86.7	84.8	83.9	80.2	77.4	73.8	71.0	68.2
7.5°	106.0	102.3	97.7	94.0	91.3	89.4	84.8	80.2	75.6	71.0	66.4
10°	118.9	113.4	106.9	101.4	97.7	95.0	88.5	82.1	76.5	70.1	64.5
12.5°	133.7	125.4	117.1	109.7	105.1	101.4	93.1	84.8	77.4	70.1	63.6
15°	147.5	138.3	128.2	118.0	112.5	107.9	97.7	87.6	78.4	70.1	61.8
17.5°	163.2	151.2	139.2	126.3	120.8	114.3	102.3	90.4	80.2	70.1	59.9
20°	177.9	164.1	149.4	134.6	128.2	120.8	106.9	93.1	81.1	69.1	59.0
22.5°	192.7	177.0	160.4	143.8	135.5	127.2	110.6	95.9	82.1	69.1	57.2
25°	208.4	190.8	171.5	153.0	143.8	133.7	116.2	98.6	83.0	69.1	56.2
27.5°	224.0	203.8	183.5	162.3	151.2	141.1	120.8	101.4	83.9	69.1	55.3
30°	239.7	216.7	193.6	170.6	159.5	147.5	125.4	104.2	84.8	68.2	54.4
32.5°	254.5	228.6	204.7	178.9	166.9	154.0	130.0	106.9	86.7	68.2	52.6
35°	268.3	243.4	214.8	188.1	174.3	160.4	133.7	108.8	86.7	68.2	51.6
37.5°	280.3	255.4	225.0	196.4	181.6	166.9	138.3	111.6	88.5	68.2	50.7
40°	293.2	265.5	236.0	203.8	188.1	172.4	142.9	114.3	89.4	67.3	49.8
42.5°	304.2	275.7	246.2	212.1	195.5	178.9	146.6	116.2	89.4	67.3	48.9
45°	314.4	285.8	254.5	219.4	201.9	184.4	150.3	118.9	91.3	67.3	47.9
47.5°	323.6	295.0	262.8	225.9	208.4	189.9	154.9	120.8	91.3	67.3	47.0
50°	331.9	303.3	270.1	234.2	213.9	195.5	158.6	123.5	92.2	67.3	46.1
52.5°	339.3	310.7	278.4	240.6	219.4	200.1	161.3	125.4	93.1	66.4	46.1
55°	346.7	317.2	284.9	247.1	225.0	204.7	165.0	127.2	94.0	67.3	45.2
57.5°	353.1	324.5	290.4	252.6	231.4	209.3	168.7	129.1	95.0	66.4	45.2
60°	356.8	329.1	295.9	258.1	236.0	213.9	171.5	130.9	95.9	66.4	44.3
62.5°	361.4	334.7	300.6	262.8	240.6	218.5	175.2	132.8	96.8	66.4	44.3
65°	365.1	338.4	306.1	267.4	246.2	222.2	177.9	134.6	97.7	67.3	43.3
67.5°	367.9	342.0	309.8	271.1	249.9	225.9	180.7	136.5	97.7	67.3	43.3
70°	370.6	345.7	313.5	275.7	253.5	228.6	182.5	137.4	98.6	67.3	43.3
72.5°	372.5	348.5	317.2	277.5	256.3	232.3	185.3	139.2	99.6	67.3	43.3
75°	373.4	349.4	319.0	280.3	258.1	235.1	187.2	140.1	99.6	67.3	42.4
77.5°	375.2	351.3	320.8	282.1	260.0	236.9	188.1	141.1	100.5	67.3	42.4
80°	376.2	353.1	321.8	284.0	261.8	237.9	189.9	142.0	100.5	67.3	42.4
82.5°	376.2	354.0	322.7	284.9	262.8	238.8	190.8	142.9	101.4	67.3	42.4
85°	377.1	355.0	323.6	285.8	263.7	239.7	190.8	142.9	101.4	67.3	42.4
87.5°	377.1	355.0	324.5	286.7	264.6	240.6	191.8	143.8	101.4	67.3	42.4
90°	378.0	356.8	325.5	287.7	265.5	242.5	192.7	143.8	102.3	68.2	42.4
92.5°	374.3	352.2	322.7	284.9	262.8	238.8	190.8	142.9	101.4	67.3	42.4
95°	374.3	352.2	322.7	284.0	261.8	238.8	189.9	142.9	101.4	67.3	42.4
97.5°	374.3	352.2	321.8	283.0	261.8	237.9	189.9	142.9	101.4	67.3	42.4
100°	374.3	351.3	320.8	282.1	260.9	236.9	189.0	142.0	101.4	67.3	42.4
102.5°	374.3	350.3	319.9	281.2	259.1	236.0	188.1	142.0	100.5	67.3	43.3
105°	374.3	349.4	318.1	279.4	257.2	234.2	187.2	141.1	100.5	68.2	43.3
107.5°	373.4	348.5	316.2	278.4	256.3	233.3	186.2	140.1	100.5	68.2	43.3
110°	372.5	346.7	314.4	275.7	253.5	230.5	184.4	139.2	100.5	68.2	44.3





TEST NUMBER: P190109

CATALOG NUMBER: TRB11-LD4-20W-50-CL-BK-UNV-EDC1-CSTG

**CANDELA DISTRIBUTION (continued):**

	50°	55°	60°	65°	67.5°	70°	75°	80°	85°	90°	95°
112.5°	369.7	343.0	310.7	272.0	250.8	226.8	181.6	138.3	99.6	68.2	44.3
115°	367.9	341.1	307.9	269.2	248.0	224.0	179.8	137.4	99.6	69.1	45.2
117.5°	365.1	337.4	304.2	265.5	244.3	221.3	177.9	135.5	99.6	69.1	46.1
120°	361.4	332.8	299.6	261.8	238.8	217.6	175.2	133.7	98.6	69.1	47.0
122.5°	355.9	327.3	294.1	256.3	235.1	213.9	172.4	132.8	97.7	70.1	47.0
125°	350.3	320.8	288.6	251.7	229.6	209.3	168.7	130.9	97.7	70.1	47.9
127.5°	343.9	315.3	282.1	245.2	223.1	203.8	165.0	128.2	96.8	70.1	48.9
130°	335.6	307.0	273.8	237.9	217.6	199.1	162.3	126.3	95.9	70.1	49.8
132.5°	327.3	298.7	267.4	231.4	212.1	193.6	158.6	124.5	95.9	71.0	50.7
135°	319.0	290.4	259.1	223.1	205.6	189.0	154.9	122.6	95.0	71.0	51.6
137.5°	307.9	281.2	250.8	215.7	199.1	183.5	151.2	120.8	94.0	71.9	52.6
140°	296.9	269.2	239.7	207.4	191.8	177.0	146.6	118.0	93.1	71.9	53.5
142.5°	284.0	258.1	228.6	200.1	185.3	170.6	142.9	116.2	93.1	71.9	55.3
145°	272.0	247.1	219.4	191.8	177.9	165.0	139.2	114.3	92.2	72.8	56.2
147.5°	258.1	234.2	209.3	184.4	171.5	158.6	134.6	112.5	92.2	73.8	58.1
150°	244.3	221.3	199.1	176.1	164.1	153.0	130.9	109.7	91.3	74.7	59.9
152.5°	226.8	207.4	187.2	166.9	155.8	145.7	126.3	106.9	90.4	74.7	60.8
155°	212.1	195.5	177.0	158.6	148.4	139.2	121.7	105.1	89.4	74.7	62.7
157.5°	198.2	182.5	166.9	150.3	141.1	133.7	118.0	102.3	88.5	75.6	64.5
160°	183.5	169.6	155.8	141.1	133.7	127.2	113.4	100.5	87.6	76.5	65.5
162.5°	167.8	156.7	144.7	132.8	126.3	119.9	108.8	96.8	86.7	76.5	67.3
165°	153.0	143.8	133.7	123.5	118.9	113.4	104.2	94.0	85.7	77.4	69.1
167.5°	138.3	131.8	123.5	116.2	111.6	107.9	99.6	92.2	84.8	77.4	71.0
170°	125.4	119.9	114.3	107.9	105.1	101.4	95.0	89.4	83.9	78.4	72.8
172.5°	111.6	107.9	104.2	99.6	97.7	95.0	90.4	86.7	82.1	78.4	73.8
175°	98.6	96.8	94.0	91.3	90.4	88.5	85.7	83.9	80.2	77.4	74.7
177.5°	87.6	86.7	85.7	84.8	83.9	83.9	82.1	81.1	79.3	78.4	77.4
180°	76.5	76.5	76.5	76.5	76.5	76.5	76.5	76.5	76.5	76.5	76.5



TEST NUMBER: P190109

CATALOG NUMBER: TRB11-LD4-20W-50-CL-BK-UNV-EDC1-CSTG

**CANDELA DISTRIBUTION (continued):**

	100°	105°	110°	112.5°	115°	120°	125°	130°	135°	140°	145°
0°	69.1	69.1	69.1	69.1	69.1	69.1	69.1	69.1	69.1	69.1	69.1
2.5°	68.2	66.4	64.5	63.6	63.6	61.8	59.9	58.1	57.2	56.2	55.3
5°	65.5	62.7	59.9	58.1	57.2	54.4	52.6	49.8	48.9	47.0	45.2
7.5°	62.7	59.0	55.3	53.5	51.6	47.9	45.2	42.4	40.6	37.8	36.0
10°	59.9	54.4	50.7	47.9	46.1	42.4	38.7	36.0	33.2	30.4	28.6
12.5°	57.2	51.6	46.1	43.3	41.5	36.9	33.2	29.5	26.7	24.0	22.1
15°	54.4	47.9	42.4	39.6	36.9	32.3	27.7	24.9	21.2	18.4	16.6
17.5°	51.6	45.2	37.8	35.0	32.3	27.7	23.0	19.4	16.6	13.8	12.0
20°	49.8	41.5	35.0	32.3	28.6	24.0	19.4	15.7	12.0	10.1	8.3
22.5°	47.9	38.7	31.3	28.6	25.8	20.3	15.7	12.0	9.2	7.4	5.5
25°	45.2	36.9	28.6	25.8	22.1	16.6	12.9	9.2	6.5	4.6	3.7
27.5°	43.3	34.1	25.8	23.0	19.4	13.8	10.1	7.4	4.6	3.7	1.8
30°	41.5	32.3	24.0	20.3	17.5	12.0	8.3	5.5	3.7	1.8	0.9
32.5°	40.6	30.4	21.2	18.4	14.8	10.1	6.5	3.7	1.8	1.8	0.9
35°	38.7	28.6	19.4	15.7	12.9	8.3	4.6	2.8	1.8	0.9	0.9
37.5°	36.9	26.7	17.5	14.8	11.1	6.5	3.7	1.8	0.9	0.9	0.9
40°	36.0	24.9	16.6	12.9	10.1	5.5	2.8	1.8	1.8	0.9	0.9
42.5°	34.1	24.0	14.8	11.1	8.3	4.6	1.8	1.8	1.8	0.9	0.9
45°	33.2	22.1	12.9	10.1	7.4	3.7	1.8	1.8	1.8	0.9	1.8
47.5°	32.3	21.2	12.0	9.2	6.5	2.8	1.8	1.8	1.8	0.9	0.9
50°	31.3	20.3	11.1	8.3	5.5	2.8	1.8	1.8	1.8	1.8	1.8
52.5°	30.4	19.4	10.1	7.4	4.6	1.8	1.8	1.8	1.8	1.8	0.9
55°	29.5	18.4	9.2	6.5	4.6	1.8	1.8	1.8	1.8	1.8	1.8
57.5°	28.6	17.5	9.2	6.5	3.7	1.8	1.8	1.8	1.8	1.8	1.8
60°	28.6	16.6	8.3	5.5	3.7	1.8	1.8	1.8	1.8	1.8	1.8
62.5°	27.7	16.6	8.3	5.5	3.7	1.8	1.8	1.8	1.8	1.8	1.8
65°	27.7	15.7	7.4	4.6	2.8	1.8	1.8	1.8	1.8	1.8	1.8
67.5°	26.7	15.7	7.4	4.6	2.8	1.8	1.8	1.8	1.8	1.8	1.8
70°	26.7	14.8	7.4	4.6	2.8	1.8	1.8	1.8	1.8	1.8	1.8
72.5°	26.7	14.8	6.5	4.6	2.8	2.8	1.8	1.8	1.8	1.8	1.8
75°	25.8	14.8	6.5	4.6	2.8	2.8	2.8	1.8	1.8	2.8	2.8
77.5°	25.8	13.8	6.5	3.7	2.8	2.8	2.8	2.8	2.8	2.8	1.8
80°	25.8	13.8	6.5	3.7	2.8	1.8	1.8	2.8	1.8	2.8	1.8
82.5°	25.8	13.8	6.5	3.7	2.8	1.8	1.8	2.8	2.8	1.8	1.8
85°	25.8	13.8	5.5	3.7	2.8	1.8	1.8	1.8	1.8	1.8	1.8
87.5°	24.9	13.8	5.5	3.7	1.8	1.8	1.8	1.8	1.8	1.8	1.8
90°	25.8	13.8	5.5	3.7	1.8	1.8	1.8	1.8	1.8	1.8	1.8
92.5°	25.8	13.8	5.5	3.7	2.8	1.8	1.8	1.8	1.8	1.8	1.8
95°	25.8	13.8	5.5	3.7	2.8	1.8	1.8	1.8	1.8	1.8	1.8
97.5°	25.8	13.8	6.5	3.7	2.8	1.8	1.8	1.8	1.8	1.8	1.8
100°	25.8	13.8	6.5	3.7	2.8	1.8	1.8	1.8	1.8	1.8	1.8
102.5°	25.8	14.8	6.5	3.7	2.8	1.8	1.8	1.8	1.8	1.8	1.8
105°	26.7	14.8	6.5	3.7	2.8	1.8	1.8	1.8	1.8	1.8	1.8
107.5°	26.7	14.8	7.4	4.6	2.8	1.8	1.8	1.8	1.8	1.8	1.8
110°	27.7	15.7	7.4	4.6	2.8	1.8	1.8	1.8	1.8	1.8	1.8



TEST NUMBER: P190109

CATALOG NUMBER: TRB11-LD4-20W-50-CL-BK-UNV-EDC1-CSTG

**CANDELA DISTRIBUTION (continued):**

	100°	105°	110°	112.5°	115°	120°	125°	130°	135°	140°	145°
112.5°	27.7	15.7	7.4	4.6	2.8	1.8	1.8	1.8	1.8	1.8	1.8
115°	28.6	16.6	8.3	5.5	3.7	1.8	1.8	1.8	1.8	1.8	1.8
117.5°	29.5	17.5	9.2	6.5	3.7	1.8	1.8	1.8	1.8	1.8	1.8
120°	30.4	18.4	10.1	6.5	4.6	1.8	1.8	1.8	1.8	1.8	1.8
122.5°	31.3	19.4	10.1	7.4	4.6	1.8	1.8	1.8	1.8	1.8	1.8
125°	32.3	20.3	11.1	8.3	5.5	2.8	1.8	1.8	1.8	1.8	1.8
127.5°	33.2	21.2	12.0	9.2	6.5	2.8	1.8	1.8	1.8	1.8	1.8
130°	34.1	22.1	12.9	10.1	7.4	2.8	1.8	1.8	1.8	1.8	1.8
132.5°	35.0	24.0	14.8	11.1	8.3	3.7	1.8	1.8	1.8	0.9	0.9
135°	36.9	24.9	15.7	12.0	9.2	4.6	1.8	1.8	1.8	0.9	0.9
137.5°	37.8	26.7	17.5	13.8	11.1	6.5	2.8	1.8	1.8	1.8	1.8
140°	39.6	28.6	19.4	15.7	12.0	7.4	3.7	1.8	1.8	0.9	0.9
142.5°	41.5	30.4	21.2	17.5	13.8	9.2	5.5	2.8	1.8	0.9	0.9
145°	43.3	32.3	24.0	19.4	16.6	11.1	6.5	3.7	1.8	0.9	0.9
147.5°	45.2	35.0	25.8	22.1	18.4	12.9	8.3	5.5	3.7	1.8	0.9
150°	47.0	36.9	28.6	24.9	21.2	15.7	11.1	7.4	4.6	2.8	1.8
152.5°	48.9	39.6	31.3	27.7	24.0	18.4	13.8	10.1	6.5	4.6	2.8
155°	51.6	42.4	34.1	30.4	27.7	21.2	16.6	12.9	9.2	7.4	5.5
157.5°	53.5	45.2	37.8	34.1	30.4	25.8	20.3	16.6	12.9	10.1	8.3
160°	56.2	47.9	40.6	37.8	35.0	29.5	24.9	20.3	17.5	13.8	12.0
162.5°	59.0	51.6	44.3	41.5	38.7	34.1	29.5	24.9	22.1	18.4	16.6
165°	61.8	54.4	48.9	46.1	43.3	38.7	34.1	30.4	27.7	24.0	22.1
167.5°	64.5	58.1	52.6	50.7	47.9	44.3	39.6	36.9	33.2	30.4	28.6
170°	67.3	61.8	57.2	55.3	53.5	49.8	46.1	43.3	40.6	37.8	35.0
172.5°	69.1	65.5	61.8	60.8	59.0	56.2	52.6	50.7	47.9	45.2	43.3
175°	71.9	69.1	67.3	66.4	64.5	62.7	60.8	59.0	57.2	55.3	53.5
177.5°	75.6	73.8	72.8	71.9	71.9	71.0	69.1	68.2	66.4	65.5	64.5
180°	76.5	76.5	76.5	76.5	76.5	76.5	76.5	76.5	76.5	76.5	76.5



TEST NUMBER: P190109

CATALOG NUMBER: TRB11-LD4-20W-50-CL-BK-UNV-EDC1-CSTG

**CANDELA DISTRIBUTION (continued):**

	150°	155°	157.5°	160°	165°	170°	175°	180°
0°	69.1	69.1	69.1	69.1	69.1	69.1	69.1	69.1
2.5°	54.4	53.5	52.6	52.6	51.6	51.6	51.6	50.7
5°	43.3	42.4	41.5	41.5	40.6	40.6	39.6	39.6
7.5°	34.1	33.2	32.3	32.3	31.3	30.4	29.5	29.5
10°	26.7	24.9	24.9	24.0	23.0	22.1	22.1	22.1
12.5°	20.3	18.4	17.5	17.5	16.6	15.7	14.8	14.8
15°	14.8	12.9	12.0	12.0	11.1	10.1	10.1	9.2
17.5°	10.1	8.3	8.3	7.4	6.5	6.5	6.5	6.5
20°	6.5	5.5	5.5	4.6	4.6	3.7	3.7	3.7
22.5°	4.6	3.7	2.8	2.8	1.8	1.8	1.8	1.8
25°	2.8	1.8	1.8	1.8	0.9	0.9	0.9	0.9
27.5°	1.8	0.9	0.9	0.9	0.9	0.9	0.9	0.9
30°	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
32.5°	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
35°	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
37.5°	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
40°	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
42.5°	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
45°	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
47.5°	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
50°	1.8	1.8	0.9	0.9	0.9	0.9	0.9	0.9
52.5°	0.9	0.9	0.9	0.9	0.9	0.9	0.9	1.8
55°	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
57.5°	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
60°	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
62.5°	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
65°	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
67.5°	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
70°	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
72.5°	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
75°	2.8	1.8	1.8	2.8	1.8	1.8	1.8	1.8
77.5°	1.8	1.8	1.8	2.8	2.8	1.8	1.8	2.8
80°	1.8	1.8	1.8	1.8	2.8	1.8	1.8	1.8
82.5°	1.8	1.8	2.8	1.8	1.8	1.8	1.8	1.8
85°	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
87.5°	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
90°	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
92.5°	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
95°	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
97.5°	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
100°	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
102.5°	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
105°	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
107.5°	1.8	1.8	1.8	1.8	1.8	0.9	0.9	0.9
110°	1.8	1.8	1.8	1.8	1.8	1.8	0.9	0.9



TEST NUMBER: P190109

CATALOG NUMBER: TRB11-LD4-20W-50-CL-BK-UNV-EDC1-CSTG

**CANDELA DISTRIBUTION (continued):**

	150°	155°	157.5°	160°	165°	170°	175°	180°
112.5°	1.8	1.8	1.8	1.8	0.9	0.9	0.9	0.9
115°	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
117.5°	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
120°	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
122.5°	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
125°	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
127.5°	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
130°	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
132.5°	1.8	1.8	0.9	0.9	0.9	0.9	0.9	0.9
135°	0.9	0.9	0.9	0.9	1.8	0.9	0.9	0.9
137.5°	0.9	0.9	0.9	1.8	1.8	0.9	0.9	0.9
140°	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
142.5°	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
145°	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
147.5°	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
150°	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
152.5°	1.8	0.9	0.9	0.9	0.9	0.9	0.9	0.9
155°	3.7	2.8	2.8	1.8	1.8	0.9	0.9	0.9
157.5°	6.5	5.5	4.6	4.6	3.7	3.7	2.8	2.8
160°	10.1	8.3	8.3	7.4	6.5	6.5	5.5	5.5
162.5°	14.8	12.9	12.0	12.0	10.1	10.1	9.2	9.2
165°	20.3	18.4	17.5	16.6	15.7	14.8	14.8	13.8
167.5°	26.7	24.9	24.0	24.0	22.1	21.2	21.2	21.2
170°	34.1	32.3	31.3	31.3	29.5	29.5	28.6	28.6
172.5°	42.4	40.6	39.6	39.6	38.7	37.8	37.8	37.8
175°	52.6	50.7	49.8	49.8	48.9	48.9	47.9	47.9
177.5°	64.5	63.6	62.7	62.7	61.8	61.8	61.8	61.8
180°	76.5	76.5	76.5	76.5	76.5	76.5	76.5	76.5

(END OF REPORT)