

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: P190089

Luminaire Tested: **TRR11-LD4-15W-50-CL-BK-UNV-EDC1**

Issue Date: 3/3/2020



Test Information

Test Method: LM-79-08
Report Number: P190089
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-LD4-15W-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 300mA
OT25W/1

Summary

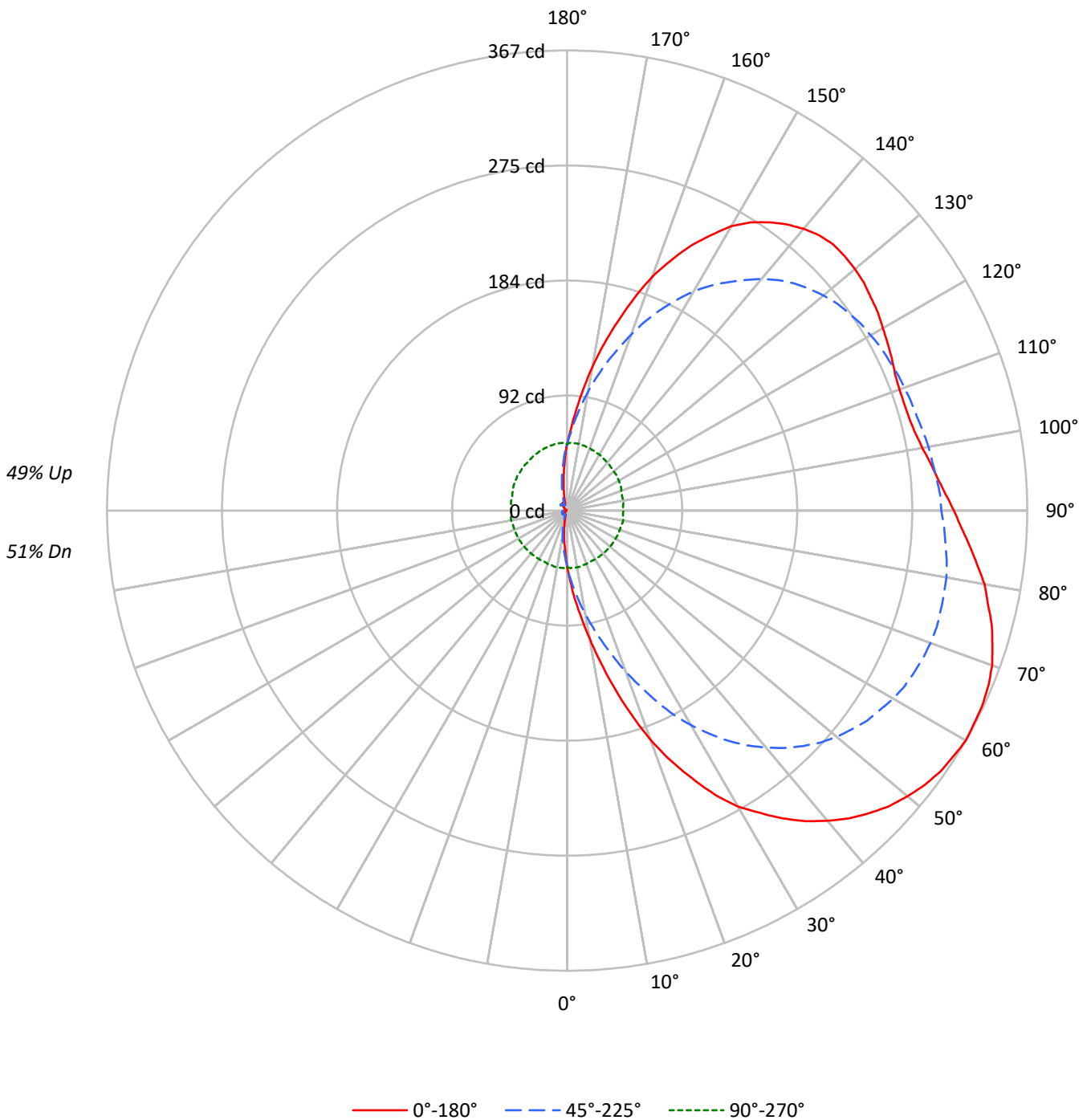
Lumens per Lamp: N/A
Luminaire Lumens: 1469.0 lumens
Efficiency: N/A
Efficacy: 102.0 lumens/watt
Spacing Criteria (0/90/45): 3.51 / 1.53 / 3.09
Luminous Opening: Rectangular w/ Sides (W: 0.92' x L: 0.29' x H: 0.92')
CIE Type: General Diffuse

Input Watts (W): 14.4
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: TRR11-LD4-15W-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	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°	1800	1800	1800
5°	2235	1706	799
10°	2733	1595	331
15°	3333	1489	129
20°	3887	1423	62
25°	4241	1354	68
30°	4501	1317	63
35°	4601	1292	58
40°	4666	1277	55
45°	4689	1273	34
50°	4678	1277	25
55°	4645	1292	24
60°	4586	1317	16
65°	4501	1354	16
70°	4407	1404	16
75°	4284	1469	16
80°	4163	1574	23
85°	4032	1661	16



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	4.6	0.3
10°-20°	17.6	1.2
20°-30°	39.1	2.7
30°-40°	66.3	4.5
40°-50°	93.7	6.4
50°-60°	117.2	8.0
60°-70°	133.8	9.1
70°-80°	142.0	9.7
80°-90°	141.6	9.6
90°-100°	136.1	9.3
100°-110°	128.5	8.7
110°-120°	119.6	8.1
120°-130°	107.3	7.3
130°-140°	89.4	6.1
140°-150°	66.2	4.5
150°-160°	41.0	2.8
160°-170°	19.6	1.3
170°-180°	5.4	0.4
0°-30°	61.4	4.2
0°-40°	127.7	8.7
0°-60°	338.6	23.0
0°-90°	756.0	51.5
90°-120°	384.2	26.2
90°-150°	647.0	44.0
90°-180°	713.0	48.5
0°-180°	1469.0	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	45	45	45	45	45	
5°	70	63	46	31	25	8
15°	147	108	45	13	6	43
25°	235	167	45	4	4	110
35°	300	224	45	4	4	188
45°	341	266	45	4	2	264
55°	363	292	45	4	2	325
65°	366	305	45	4	1	362
75°	351	308	45	4	1	370
85°	322	303	45	4	1	266
90°	308	298	45	3	1	169
95°	296	296	45	4	1	241
105°	283	289	45	4	1	300
115°	286	283	47	5	1	284
125°	296	274	48	6	2	265
135°	300	256	49	7	4	231
145°	281	222	50	6	7	176
155°	233	177	52	5	6	108
165°	156	122	54	14	6	46
175°	79	72	54	37	30	9
180°	53	53	53	53	53	



TEST NUMBER: P190089

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CANDELA DISTRIBUTION (FULL):

	0°	5°	10°	15°	20°	22.5°	25°	30°	35°	40°	45°
0°	44.7	44.7	44.7	44.7	44.7	44.7	44.7	44.7	44.7	44.7	44.7
2.5°	56.0	56.0	56.0	55.4	55.4	54.8	55.4	54.8	54.1	54.1	53.5
5°	70.5	69.9	69.9	69.2	68.6	67.3	68.0	67.3	65.5	64.2	62.9
7.5°	85.6	85.6	85.6	84.3	83.1	83.1	81.8	80.6	77.4	75.5	73.0
10°	103.9	103.2	103.2	101.3	98.8	98.8	96.9	94.4	90.6	87.5	83.7
12.5°	124.0	123.4	122.7	120.2	117.1	115.2	114.6	110.2	105.7	100.7	95.7
15°	147.3	145.4	144.8	141.6	137.2	135.3	133.4	127.8	122.1	116.4	108.3
17.5°	170.6	169.3	169.3	164.9	159.9	156.1	154.2	146.7	139.1	131.6	122.1
20°	194.5	191.3	190.1	186.3	181.3	178.1	175.6	166.8	157.4	147.3	136.6
22.5°	215.9	213.4	211.5	207.7	202.0	198.3	195.8	185.7	175.6	164.9	151.1
25°	235.4	234.8	232.9	228.5	222.8	218.4	214.6	205.2	193.9	182.5	167.4
27.5°	255.5	253.7	251.8	248.0	241.7	237.3	232.9	222.8	212.1	198.9	183.2
30°	272.5	270.7	268.8	264.4	258.1	253.7	250.5	239.2	228.5	214.6	197.6
32.5°	285.8	285.1	283.2	278.8	272.5	268.8	265.0	254.3	242.3	227.9	210.9
35°	299.6	299.0	296.5	292.1	286.4	282.0	277.6	267.5	255.5	241.7	224.1
37.5°	312.2	311.6	309.1	304.6	298.4	295.2	290.2	280.1	267.5	253.0	236.0
40°	322.9	322.9	320.4	316.0	309.7	305.9	301.5	290.8	278.8	265.0	246.7
42.5°	333.0	332.3	329.8	325.4	319.1	316.0	310.9	301.5	288.9	275.1	256.8
45°	341.2	341.2	338.0	334.2	327.9	324.8	320.4	309.7	297.7	283.2	265.6
47.5°	348.7	348.1	345.6	341.8	334.9	331.7	327.3	317.9	305.3	290.8	273.8
50°	354.4	353.7	351.2	347.4	341.8	338.0	333.6	324.2	311.6	297.7	280.7
52.5°	359.4	358.1	356.3	351.9	346.2	343.0	338.6	329.2	317.9	303.4	286.4
55°	363.2	361.9	360.0	355.6	350.6	346.8	342.4	333.6	322.3	308.4	292.1
57.5°	365.1	364.4	361.9	358.1	352.5	349.3	345.6	336.1	325.4	312.2	295.8
60°	367.0	365.7	363.2	359.4	353.7	350.6	347.4	338.6	328.6	316.0	300.2
62.5°	366.3	365.7	363.2	359.4	354.4	351.2	348.1	339.9	329.8	317.9	303.4
65°	365.7	365.1	362.6	358.8	353.7	351.2	348.1	339.9	331.1	319.8	305.3
67.5°	363.8	362.6	360.0	356.9	351.9	349.3	346.8	339.9	331.1	320.4	307.2
70°	360.7	359.4	357.5	353.7	350.0	347.4	344.9	338.6	331.1	321.0	308.4
72.5°	355.6	355.0	352.5	350.0	346.2	343.7	341.2	336.1	329.2	320.4	309.1
75°	350.6	349.3	347.4	344.9	341.8	339.3	337.4	333.0	327.3	319.1	308.4
77.5°	343.7	343.0	341.8	339.3	336.7	334.9	333.6	329.8	324.8	317.9	307.8
80°	338.0	336.7	335.5	333.0	331.1	329.8	329.2	326.0	321.6	316.0	307.2
82.5°	329.8	329.2	327.9	326.0	324.8	323.5	322.9	321.0	318.5	312.8	305.3
85°	322.3	322.3	321.0	319.8	318.5	317.9	317.9	316.0	314.1	310.3	302.8
87.5°	314.7	314.7	314.1	312.8	312.2	312.2	311.6	310.9	310.3	307.2	300.9
90°	308.4	307.8	307.2	306.5	306.5	306.5	307.2	307.2	306.5	304.0	298.4
92.5°	302.1	301.5	300.9	300.9	302.1	302.1	302.8	304.0	304.0	302.8	297.7
95°	296.5	295.8	296.5	295.8	297.1	298.4	299.6	300.9	301.5	300.2	295.8
97.5°	292.1	291.4	291.4	292.1	293.9	294.6	295.8	297.1	298.4	297.7	293.9
100°	287.7	287.7	287.7	288.9	290.2	291.4	292.7	294.6	296.5	295.8	292.7
102.5°	284.5	284.5	285.1	285.8	287.7	288.9	290.2	292.7	293.9	293.9	290.8
105°	282.6	282.6	283.2	283.9	285.8	287.7	288.3	290.8	292.1	292.7	288.9
107.5°	282.0	282.0	282.6	283.9	285.8	287.0	288.3	290.2	292.1	291.4	287.7
110°	282.0	282.6	282.6	283.9	285.8	287.0	288.3	290.2	291.4	290.8	286.4



TEST NUMBER: P190089

CATALOG NUMBER: TRR11-LD4-15W-50-CL-BK-UNV-EDC1

CANDELA DISTRIBUTION (continued):

	0°	5°	10°	15°	20°	22.5°	25°	30°	35°	40°	45°
112.5°	283.2	283.9	283.9	285.8	287.0	288.3	288.9	290.8	290.8	290.2	285.1
115°	285.8	285.8	286.4	287.0	288.9	289.5	290.2	291.4	291.4	288.9	283.2
117.5°	288.3	288.3	288.9	289.5	290.8	290.8	291.4	292.1	291.4	288.3	282.0
120°	290.8	290.8	291.4	291.4	292.1	292.7	292.7	292.7	290.8	287.0	279.5
122.5°	293.9	293.3	293.9	293.9	294.6	294.6	293.9	293.3	290.8	286.4	277.6
125°	295.8	295.8	295.8	295.8	295.8	295.2	295.2	293.3	290.2	284.5	274.4
127.5°	298.4	297.7	297.7	297.1	296.5	295.8	295.2	292.7	288.3	281.4	271.3
130°	299.6	299.0	299.0	297.7	296.5	295.2	293.9	290.8	285.8	277.6	266.9
132.5°	300.2	299.6	299.0	297.7	295.8	294.6	292.7	288.9	282.6	273.8	261.8
135°	300.2	299.6	298.4	297.1	294.6	292.7	290.8	285.8	278.8	268.8	256.2
137.5°	297.7	297.1	295.8	293.9	291.4	289.5	287.0	280.7	273.2	262.5	249.3
140°	293.3	293.3	291.4	289.5	286.4	283.9	281.4	274.4	265.6	254.9	241.1
142.5°	287.7	287.0	285.1	282.6	279.5	276.3	273.8	266.2	257.4	246.1	231.6
145°	280.7	280.1	278.2	275.7	271.3	268.8	265.6	257.4	248.0	236.7	222.2
147.5°	272.5	271.9	269.4	266.9	262.5	259.3	256.2	248.0	237.9	226.6	212.7
150°	261.8	260.6	258.7	255.5	250.5	248.0	244.2	236.0	226.6	215.3	202.0
152.5°	247.4	246.7	244.2	241.7	236.7	233.5	231.0	222.2	212.7	202.0	189.5
155°	232.9	231.6	229.1	226.6	221.6	218.4	215.3	207.7	198.9	188.2	176.9
157.5°	215.9	215.3	213.4	210.2	205.8	202.7	199.5	192.6	184.4	174.4	163.7
160°	198.3	197.6	195.1	193.2	188.8	185.7	182.5	176.9	168.7	159.2	149.2
162.5°	177.5	176.9	175.6	173.1	169.3	166.2	164.3	157.4	151.1	143.5	135.3
165°	156.1	154.8	153.6	152.3	148.5	146.7	144.1	139.7	134.7	128.4	122.1
167.5°	136.0	135.3	134.1	132.8	130.3	128.4	126.5	123.4	119.0	114.6	108.9
170°	116.4	115.8	115.2	113.3	112.0	110.8	109.5	107.0	103.9	100.1	96.3
172.5°	96.9	96.9	96.3	95.0	94.4	93.2	92.5	91.3	89.4	86.2	83.7
175°	79.3	79.3	79.3	78.0	78.0	77.4	76.8	76.2	75.5	73.6	72.4
177.5°	64.2	63.6	63.6	64.2	63.6	63.6	62.9	62.9	62.9	62.3	61.7
180°	52.9	52.9	52.9	52.9	52.9	52.9	52.9	52.9	52.9	52.9	52.9



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CANDELA DISTRIBUTION (continued):

	50°	55°	60°	65°	67.5°	70°	75°	80°	85°	90°	95°
0°	44.7	44.7	44.7	44.7	44.7	44.7	44.7	44.7	44.7	44.7	44.7
2.5°	52.9	52.2	51.6	51.0	50.4	49.7	49.1	47.8	47.2	45.9	44.7
5°	61.7	59.8	57.9	56.0	54.8	54.1	52.2	50.4	47.8	45.9	44.1
7.5°	70.5	67.3	64.8	61.7	59.8	58.5	55.4	52.2	49.1	45.9	43.4
10°	79.9	75.5	71.1	66.7	64.8	62.3	57.9	54.1	49.7	45.9	42.2
12.5°	90.0	84.3	78.7	72.4	69.9	66.7	61.1	56.0	50.4	45.9	40.9
15°	101.3	94.4	86.9	78.7	75.5	71.8	64.8	57.9	51.6	45.3	40.3
17.5°	113.3	104.5	95.0	85.6	80.6	76.8	68.0	59.8	52.2	45.3	39.0
20°	125.9	114.6	102.6	91.9	86.9	81.2	71.1	61.7	52.9	45.3	38.4
22.5°	137.8	125.3	112.0	98.8	92.5	86.2	74.9	63.6	53.5	44.7	37.1
25°	151.7	136.6	121.5	105.7	98.2	91.9	78.0	65.5	54.8	44.7	36.5
27.5°	166.8	147.9	130.9	113.3	105.1	96.9	81.8	68.0	55.4	44.7	35.2
30°	179.4	159.9	139.7	120.9	111.4	102.6	85.6	69.9	56.6	44.7	34.6
32.5°	192.0	172.5	149.2	127.8	117.7	107.6	88.7	72.4	57.3	44.7	34.0
35°	203.9	183.2	158.6	135.3	124.0	113.3	92.5	74.3	58.5	44.7	33.4
37.5°	215.9	193.2	168.7	142.3	130.3	118.3	95.7	76.2	59.2	44.7	32.7
40°	226.6	203.3	177.5	149.2	136.6	124.0	99.5	78.0	59.8	44.7	32.1
42.5°	236.0	212.7	185.7	156.7	142.3	128.4	102.6	79.9	60.4	44.7	31.5
45°	245.5	220.9	193.9	163.7	147.9	133.4	106.4	81.8	61.7	44.7	30.8
47.5°	253.0	229.1	200.8	170.6	153.6	138.5	109.5	83.7	62.3	44.7	30.8
50°	260.0	236.0	207.7	176.2	159.9	142.9	112.7	85.6	62.9	44.7	30.2
52.5°	266.2	242.3	214.0	181.9	165.5	147.3	115.2	87.5	63.6	44.7	29.6
55°	271.9	248.0	219.7	187.6	170.6	151.7	118.3	89.4	64.2	44.7	29.6
57.5°	276.3	252.4	224.7	192.0	175.0	155.5	120.9	90.6	65.5	44.7	29.0
60°	280.7	257.4	229.7	196.4	178.8	159.9	123.4	91.9	65.5	44.7	29.0
62.5°	284.5	261.2	234.1	200.8	183.2	163.0	125.9	93.8	66.1	44.7	28.3
65°	287.7	265.0	237.9	204.6	186.3	167.4	128.4	95.0	67.3	44.7	28.3
67.5°	290.2	268.1	241.1	207.7	190.1	170.6	130.9	96.3	67.3	44.7	27.7
70°	292.1	270.7	244.2	211.5	193.2	173.7	132.8	97.6	68.0	44.7	27.7
72.5°	293.3	272.5	246.7	214.0	195.8	175.6	134.7	98.2	68.6	44.7	27.7
75°	293.9	273.8	248.0	215.9	197.6	177.5	136.0	99.5	68.6	44.7	27.7
77.5°	293.9	274.4	249.3	217.8	199.5	180.0	137.2	100.1	69.2	45.3	27.1
80°	293.9	275.1	250.5	219.7	201.4	181.3	138.5	101.3	69.9	45.3	27.1
82.5°	292.7	275.1	250.5	220.3	202.0	182.5	139.7	102.0	69.9	45.3	27.1
85°	291.4	274.4	251.1	220.3	202.7	183.2	140.4	102.0	69.9	44.7	27.1
87.5°	290.2	273.8	250.5	220.9	203.3	183.2	141.0	102.0	69.9	44.7	26.4
90°	288.9	273.2	250.5	220.9	203.3	183.8	141.0	102.6	70.5	44.7	26.4
92.5°	288.3	272.5	249.9	219.7	202.0	182.5	140.4	102.0	69.9	44.7	26.4
95°	286.4	271.3	249.3	219.7	202.0	182.5	140.4	102.6	69.9	44.7	27.1
97.5°	285.1	270.7	248.0	219.0	201.4	182.5	140.4	102.6	70.5	45.3	27.1
100°	283.9	268.8	246.7	217.8	200.8	181.9	140.4	102.6	70.5	45.3	27.1
102.5°	282.0	267.5	245.5	216.5	199.5	180.6	139.7	102.6	70.5	45.3	27.1
105°	280.1	265.6	243.6	214.6	198.3	179.4	139.1	102.6	70.5	45.3	27.7
107.5°	278.8	263.7	241.7	213.4	196.4	178.1	138.5	102.6	71.1	45.9	27.7
110°	277.0	261.2	239.8	210.9	194.5	176.9	137.8	102.0	71.1	45.9	28.3



TEST NUMBER: P190089

CATALOG NUMBER: TRR11-LD4-15W-50-CL-BK-UNV-EDC1

CANDELA DISTRIBUTION (continued):

	50°	55°	60°	65°	67.5°	70°	75°	80°	85°	90°	95°
112.5°	275.1	259.3	237.3	209.0	192.6	175.0	136.6	101.3	71.1	46.6	28.3
115°	273.2	256.2	234.1	206.5	190.1	172.5	135.3	100.7	71.1	47.2	29.0
117.5°	270.7	253.7	231.6	203.3	186.9	170.6	133.4	100.1	71.1	47.2	29.6
120°	267.5	250.5	227.9	200.2	184.4	167.4	131.6	99.5	70.5	47.8	30.2
122.5°	264.4	246.7	224.1	195.8	180.6	164.3	129.7	98.2	70.5	47.8	30.8
125°	261.2	243.0	219.7	192.0	176.9	159.9	127.1	96.9	70.5	48.5	31.5
127.5°	256.8	237.9	215.3	187.6	172.5	155.5	124.6	95.7	69.9	48.5	32.1
130°	251.8	232.9	209.6	182.5	168.1	151.7	122.1	94.4	69.2	48.5	32.7
132.5°	246.1	226.6	203.9	177.5	163.7	147.9	119.0	92.5	69.2	49.1	33.4
135°	239.8	220.9	198.3	172.5	157.4	143.5	116.4	91.3	68.6	49.1	34.0
137.5°	232.9	213.4	191.3	166.2	151.7	139.1	113.3	89.4	68.0	49.7	34.6
140°	224.7	205.2	183.8	159.2	146.0	134.1	109.5	87.5	67.3	49.7	35.9
142.5°	215.3	197.0	176.2	151.7	140.4	129.0	106.4	85.6	66.7	50.4	36.5
145°	206.5	188.2	168.7	145.4	134.7	124.6	103.2	83.7	66.1	50.4	37.8
147.5°	197.0	179.4	159.9	139.1	129.7	119.6	100.1	82.5	65.5	51.0	38.4
150°	186.3	169.9	151.1	132.8	124.0	114.6	96.9	79.9	64.8	51.6	39.7
152.5°	175.0	158.6	142.3	125.3	117.7	109.5	93.2	78.0	64.2	51.6	40.9
155°	163.0	147.9	133.4	118.3	111.4	104.5	89.4	76.2	63.6	52.2	42.2
157.5°	150.4	138.5	125.3	112.0	105.7	98.8	86.2	74.3	62.9	52.2	43.4
160°	138.5	127.8	116.4	105.1	100.1	93.8	82.5	72.4	62.3	52.9	44.7
162.5°	125.9	117.1	107.6	98.2	93.2	88.7	78.7	69.9	61.1	52.9	45.9
165°	113.9	107.0	98.8	91.3	87.5	83.1	74.9	67.3	60.4	53.5	47.2
167.5°	102.6	96.9	90.6	84.3	81.2	78.0	71.8	65.5	59.8	53.5	48.5
170°	91.9	87.5	82.5	78.0	75.5	73.0	68.0	62.9	58.5	54.1	49.7
172.5°	81.2	78.0	74.3	71.1	69.2	68.0	64.2	60.4	57.3	54.1	50.4
175°	70.5	68.6	66.7	64.8	63.6	62.9	60.4	58.5	56.0	54.1	52.2
177.5°	61.7	60.4	59.8	59.2	58.5	57.9	57.3	56.0	55.4	54.1	53.5
180°	52.9	52.9	52.9	52.9	52.9	52.9	52.9	52.9	52.9	52.9	52.9



TEST NUMBER: P190089

CATALOG NUMBER: TRR11-LD4-15W-50-CL-BK-UNV-EDC1

CANDELA DISTRIBUTION (continued):

	100°	105°	110°	112.5°	115°	120°	125°	130°	135°	140°	145°
0°	44.7	44.7	44.7	44.7	44.7	44.7	44.7	44.7	44.7	44.7	44.7
2.5°	44.1	42.8	41.5	40.9	40.9	39.7	38.4	37.8	37.1	35.9	35.2
5°	42.2	40.3	38.4	37.8	36.5	35.2	33.4	32.1	30.8	29.6	29.0
7.5°	40.3	37.8	35.2	34.0	32.7	30.8	29.0	27.1	25.8	23.9	22.7
10°	38.4	35.2	32.1	30.8	29.6	27.1	24.5	22.7	20.8	18.9	17.6
12.5°	36.5	32.7	29.0	27.7	25.8	23.3	20.8	18.3	16.4	14.5	12.6
15°	35.2	30.2	26.4	24.5	23.3	20.1	17.0	14.5	12.6	10.7	9.4
17.5°	33.4	28.3	23.9	22.0	20.1	17.0	13.8	11.3	9.4	8.2	6.9
20°	32.1	26.4	22.0	19.5	17.6	13.8	10.7	8.8	6.9	5.7	4.4
22.5°	30.2	24.5	19.5	17.6	15.1	11.3	8.8	6.9	5.0	4.4	3.1
25°	29.0	22.7	17.6	15.1	12.6	9.4	6.9	5.0	3.8	3.1	3.1
27.5°	27.7	20.8	15.7	13.2	10.7	7.6	5.7	3.8	3.1	3.1	3.1
30°	26.4	19.5	13.8	11.3	9.4	6.3	4.4	3.1	3.1	3.1	3.8
32.5°	25.2	18.3	12.0	10.1	8.2	5.0	3.8	3.1	3.1	3.8	3.8
35°	23.9	17.0	10.7	8.8	6.9	4.4	3.1	3.1	3.8	3.8	3.8
37.5°	23.3	15.7	9.4	7.6	5.7	3.8	3.1	3.8	3.8	3.8	4.4
40°	22.0	14.5	8.8	6.9	5.0	3.1	3.1	3.8	3.8	4.4	4.4
42.5°	21.4	13.2	7.6	5.7	4.4	3.1	3.8	3.8	4.4	4.4	4.4
45°	20.8	12.6	6.9	5.0	3.8	3.1	3.8	3.8	4.4	4.4	4.4
47.5°	20.1	12.0	6.3	5.0	3.8	3.8	3.8	4.4	4.4	4.4	4.4
50°	18.9	10.7	5.7	4.4	3.8	3.8	4.4	4.4	4.4	4.4	3.8
52.5°	18.3	10.1	5.7	3.8	3.8	3.8	4.4	4.4	4.4	4.4	3.8
55°	18.3	10.1	5.0	3.8	3.8	4.4	4.4	5.0	4.4	4.4	3.8
57.5°	17.6	9.4	5.0	3.8	3.8	4.4	4.4	5.0	4.4	4.4	3.8
60°	17.0	8.8	4.4	3.8	3.8	4.4	5.0	5.0	4.4	3.8	3.1
62.5°	16.4	8.2	4.4	3.8	4.4	4.4	5.0	5.0	4.4	3.8	3.1
65°	16.4	8.2	4.4	3.8	4.4	5.0	5.0	5.0	4.4	3.8	3.1
67.5°	15.7	7.6	4.4	3.8	4.4	5.0	5.0	5.0	4.4	3.8	2.5
70°	15.7	7.6	4.4	4.4	4.4	5.0	5.0	5.0	4.4	3.1	2.5
72.5°	15.1	7.6	4.4	4.4	4.4	5.0	5.7	5.0	4.4	3.1	2.5
75°	15.1	6.9	4.4	4.4	5.0	5.0	5.7	5.0	4.4	3.1	2.5
77.5°	14.5	6.9	4.4	4.4	5.0	5.7	5.7	5.0	3.8	3.1	2.5
80°	14.5	6.9	4.4	4.4	5.0	5.7	5.7	5.0	3.8	3.1	2.5
82.5°	14.5	6.9	4.4	4.4	5.0	5.7	5.7	5.0	3.8	3.1	2.5
85°	14.5	6.3	4.4	4.4	5.0	5.0	5.0	4.4	3.8	2.5	1.9
87.5°	13.8	6.3	3.8	4.4	4.4	5.0	5.0	4.4	3.1	2.5	1.9
90°	13.8	6.3	3.8	4.4	4.4	5.0	5.0	4.4	3.1	2.5	1.9
92.5°	13.8	6.3	4.4	5.0	5.0	5.7	5.7	5.0	3.8	2.5	1.9
95°	13.8	6.9	4.4	5.0	5.0	5.7	5.7	5.0	3.8	3.1	2.5
97.5°	14.5	6.3	4.4	4.4	5.0	5.7	5.7	5.0	3.8	3.1	1.9
100°	14.5	6.9	4.4	4.4	5.0	5.7	5.7	5.0	3.8	3.1	1.9
102.5°	14.5	6.9	4.4	4.4	5.0	5.7	5.7	5.0	3.8	3.1	2.5
105°	14.5	6.9	4.4	4.4	5.0	5.7	5.7	5.0	3.8	3.1	2.5
107.5°	15.1	6.9	4.4	4.4	5.0	5.7	5.7	5.0	4.4	3.1	2.5
110°	15.1	7.6	4.4	4.4	5.0	5.7	5.7	5.0	4.4	3.1	2.5



TEST NUMBER: P190089

CATALOG NUMBER: TRR11-LD4-15W-50-CL-BK-UNV-EDC1

CANDELA DISTRIBUTION (continued):

	100°	105°	110°	112.5°	115°	120°	125°	130°	135°	140°	145°
112.5°	15.7	7.6	4.4	4.4	5.0	5.7	5.7	5.7	4.4	3.8	2.5
115°	16.4	8.2	4.4	4.4	5.0	5.7	6.3	5.7	5.0	3.8	3.1
117.5°	17.0	8.8	5.0	4.4	5.0	5.7	6.3	6.3	5.7	4.4	3.8
120°	17.6	8.8	5.0	4.4	5.0	5.7	6.3	6.3	5.7	4.4	3.8
122.5°	18.3	9.4	5.0	4.4	5.0	5.7	6.3	6.3	5.7	5.0	4.4
125°	18.9	10.1	5.7	4.4	4.4	5.7	6.3	6.3	6.3	5.7	4.4
127.5°	19.5	10.7	6.3	5.0	4.4	5.7	6.3	6.9	6.3	5.7	5.0
130°	20.1	11.3	6.3	5.0	4.4	5.0	6.3	6.3	6.9	6.3	5.7
132.5°	21.4	12.0	6.9	5.7	4.4	5.0	5.7	6.3	6.9	6.3	6.3
135°	22.0	13.2	7.6	5.7	5.0	5.0	5.7	6.3	6.9	6.9	6.3
137.5°	23.3	14.5	8.2	6.9	5.0	4.4	5.0	6.3	6.3	6.9	6.9
140°	24.5	15.7	9.4	7.6	5.7	4.4	5.0	5.7	6.3	6.9	6.9
142.5°	25.8	17.0	10.7	8.2	6.9	5.0	5.0	5.7	6.3	6.9	6.9
145°	27.1	18.3	12.0	9.4	7.6	5.0	4.4	5.0	5.7	6.3	6.9
147.5°	28.3	20.1	13.2	10.7	8.8	6.3	4.4	5.0	5.0	5.7	6.3
150°	29.6	22.0	15.1	12.6	10.1	6.9	5.0	4.4	5.0	5.7	5.7
152.5°	31.5	23.9	17.0	14.5	12.0	8.8	6.3	5.0	4.4	5.0	5.7
155°	33.4	25.8	19.5	16.4	14.5	10.7	7.6	6.3	5.0	4.4	5.0
157.5°	35.2	28.3	22.0	19.5	17.0	12.6	9.4	7.6	6.3	5.0	5.0
160°	37.1	30.2	25.2	22.0	19.5	15.7	12.0	9.4	8.2	6.9	5.7
162.5°	39.0	32.7	27.7	25.2	22.7	18.9	15.1	12.6	10.7	8.8	7.6
165°	40.9	35.9	30.8	28.3	26.4	22.7	19.5	16.4	13.8	12.0	10.7
167.5°	43.4	38.4	34.6	32.1	30.2	27.1	23.9	20.8	18.9	16.4	15.1
170°	45.3	41.5	37.8	35.9	34.6	31.5	29.0	26.4	23.9	22.0	20.8
172.5°	47.2	44.7	41.5	40.3	38.4	36.5	34.0	32.1	30.2	28.3	27.1
175°	49.7	47.8	45.3	44.7	43.4	41.5	40.3	38.4	37.1	35.2	34.6
177.5°	52.2	51.0	49.7	49.7	48.5	47.8	46.6	45.9	45.3	44.1	44.1
180°	52.9	52.9	52.9	52.9	52.9	52.9	52.9	52.9	52.9	52.9	52.9



TEST NUMBER: P190089

CATALOG NUMBER: TRR11-LD4-15W-50-CL-BK-UNV-EDC1

CANDELA DISTRIBUTION (continued):

	150°	155°	157.5°	160°	165°	170°	175°	180°
0°	44.7	44.7	44.7	44.7	44.7	44.7	44.7	44.7
2.5°	34.6	34.6	34.0	34.0	33.4	33.4	32.7	32.7
5°	27.7	27.1	26.4	26.4	25.8	25.8	25.2	25.2
7.5°	22.0	20.8	20.1	20.1	19.5	18.9	18.3	18.3
10°	16.4	15.1	14.5	14.5	13.8	13.2	12.6	12.6
12.5°	12.0	10.7	10.1	10.1	9.4	8.8	8.2	8.8
15°	8.2	7.6	6.9	6.9	6.3	5.7	5.7	5.7
17.5°	5.7	5.0	5.0	4.4	3.8	3.8	3.8	3.8
20°	3.8	3.1	3.1	3.1	3.1	3.1	3.1	3.1
22.5°	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1
25°	3.1	3.1	3.1	3.8	3.8	3.8	3.8	3.8
27.5°	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8
30°	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8
32.5°	3.8	3.8	4.4	3.8	3.8	3.8	3.8	3.8
35°	4.4	4.4	4.4	4.4	4.4	3.8	3.8	3.8
37.5°	4.4	4.4	4.4	4.4	3.8	3.8	3.8	3.8
40°	4.4	4.4	3.8	3.8	3.8	3.8	3.8	3.8
42.5°	4.4	3.8	3.8	3.8	3.1	3.1	3.1	3.1
45°	3.8	3.8	3.8	3.1	3.1	3.1	2.5	2.5
47.5°	3.8	3.8	3.1	3.1	2.5	2.5	2.5	2.5
50°	3.8	3.1	3.1	2.5	2.5	2.5	1.9	1.9
52.5°	3.1	3.1	2.5	2.5	1.9	1.9	1.9	1.9
55°	3.1	2.5	2.5	2.5	1.9	1.9	1.9	1.9
57.5°	3.1	2.5	2.5	1.9	1.9	1.3	1.3	1.3
60°	2.5	2.5	1.9	1.9	1.3	1.3	1.3	1.3
62.5°	2.5	1.9	1.9	1.9	1.3	1.3	1.3	1.3
65°	2.5	1.9	1.9	1.9	1.3	1.3	1.3	1.3
67.5°	2.5	1.9	1.9	1.3	1.3	1.3	1.3	1.3
70°	1.9	1.9	1.9	1.3	1.3	1.3	1.3	1.3
72.5°	1.9	1.9	1.9	1.3	1.3	1.3	1.3	1.3
75°	1.9	1.9	1.9	1.3	1.3	1.3	1.3	1.3
77.5°	1.9	1.9	1.9	1.9	1.3	1.3	1.3	1.3
80°	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9
82.5°	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.3
85°	1.9	1.3	1.3	1.3	1.3	1.3	1.3	1.3
87.5°	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
90°	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
92.5°	1.9	1.3	1.3	1.3	1.3	1.3	1.3	1.3
95°	1.9	1.3	1.3	1.3	1.3	1.3	1.3	1.3
97.5°	1.9	1.3	1.3	1.3	1.3	1.3	1.3	1.3
100°	1.9	1.3	1.3	1.3	1.3	1.3	1.3	1.3
102.5°	1.9	1.3	1.3	1.3	1.3	1.3	1.3	1.3
105°	1.9	1.3	1.3	1.3	1.3	1.3	1.3	0.6
107.5°	1.9	1.3	1.3	1.3	1.3	1.3	1.3	1.3
110°	1.9	1.3	1.3	1.3	1.3	1.3	0.6	1.3



TEST NUMBER: P190089

CATALOG NUMBER: TRR11-LD4-15W-50-CL-BK-UNV-EDC1

CANDELA DISTRIBUTION (continued):

	150°	155°	157.5°	160°	165°	170°	175°	180°
112.5°	1.9	1.9	1.3	1.3	1.3	0.6	0.6	0.6
115°	2.5	1.9	1.9	1.9	1.3	1.3	1.3	1.3
117.5°	2.5	2.5	1.9	1.9	1.9	1.9	1.3	1.3
120°	3.1	2.5	2.5	1.9	1.9	1.9	1.3	1.9
122.5°	3.1	2.5	2.5	2.5	1.9	1.9	1.9	1.9
125°	3.8	3.1	3.1	2.5	2.5	1.9	1.9	1.9
127.5°	4.4	3.8	3.1	3.1	2.5	2.5	2.5	2.5
130°	4.4	3.8	3.8	3.8	3.1	2.5	2.5	2.5
132.5°	5.0	4.4	4.4	4.4	3.8	3.1	3.1	3.1
135°	5.7	5.0	5.0	5.0	4.4	3.8	3.8	3.8
137.5°	6.3	5.7	5.7	5.7	5.0	4.4	4.4	4.4
140°	6.9	6.3	6.3	6.3	5.7	5.7	5.0	5.0
142.5°	6.9	6.9	6.9	6.9	6.3	6.3	6.3	6.3
145°	6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.9
147.5°	6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.9
150°	6.3	6.9	6.9	6.9	6.9	6.9	6.9	6.9
152.5°	5.7	6.3	6.3	6.3	6.3	6.9	6.9	6.9
155°	5.0	5.7	5.7	5.7	5.7	6.3	6.3	6.3
157.5°	4.4	5.0	5.0	5.0	5.0	5.0	5.7	5.7
160°	5.0	5.0	4.4	4.4	4.4	4.4	4.4	5.0
162.5°	6.9	6.3	5.7	5.7	5.0	5.0	5.0	5.0
165°	9.4	8.2	8.2	7.6	7.6	6.9	6.9	6.3
167.5°	13.2	12.0	12.0	11.3	10.7	10.1	10.1	9.4
170°	18.9	17.6	17.0	17.0	15.7	15.1	15.1	14.5
172.5°	25.8	24.5	23.9	23.9	23.3	22.0	22.0	21.4
175°	33.4	32.7	32.1	32.1	31.5	30.8	30.8	30.2
177.5°	42.8	42.2	42.2	42.2	41.5	41.5	40.9	40.9
180°	52.9	52.9	52.9	52.9	52.9	52.9	52.9	52.9

(END OF REPORT)