

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: P190127

Luminaire Tested: **TRF11-LD4-20W-50-CL-BK-UNV-EDC1-CSTG**

Issue Date: 3/3/2020



Test Information

Test Method: LM-79-08
Report Number: P190127
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (P27876)
Test Lab: INNOVATION CENTER(G2)
Issue Date: 3/3/2020
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: FAIL-SAFE
Catalog Number: TRF11-LD4-20W-50-CL-BK-UNV-EDC1-CSTG
Description: TERRAPIN 11" LED SHALLOW CAST WALL MOUNT WITH OPEN CLEAR LENS AND QUAD LENS COVER
Light Source: (56) NICHIA 5000 NF2L757DRT
Ballast/Driver: OSRAM ELECTRONIC DRIVER PROGRAMMED AT 450mA OT40W/1

Summary

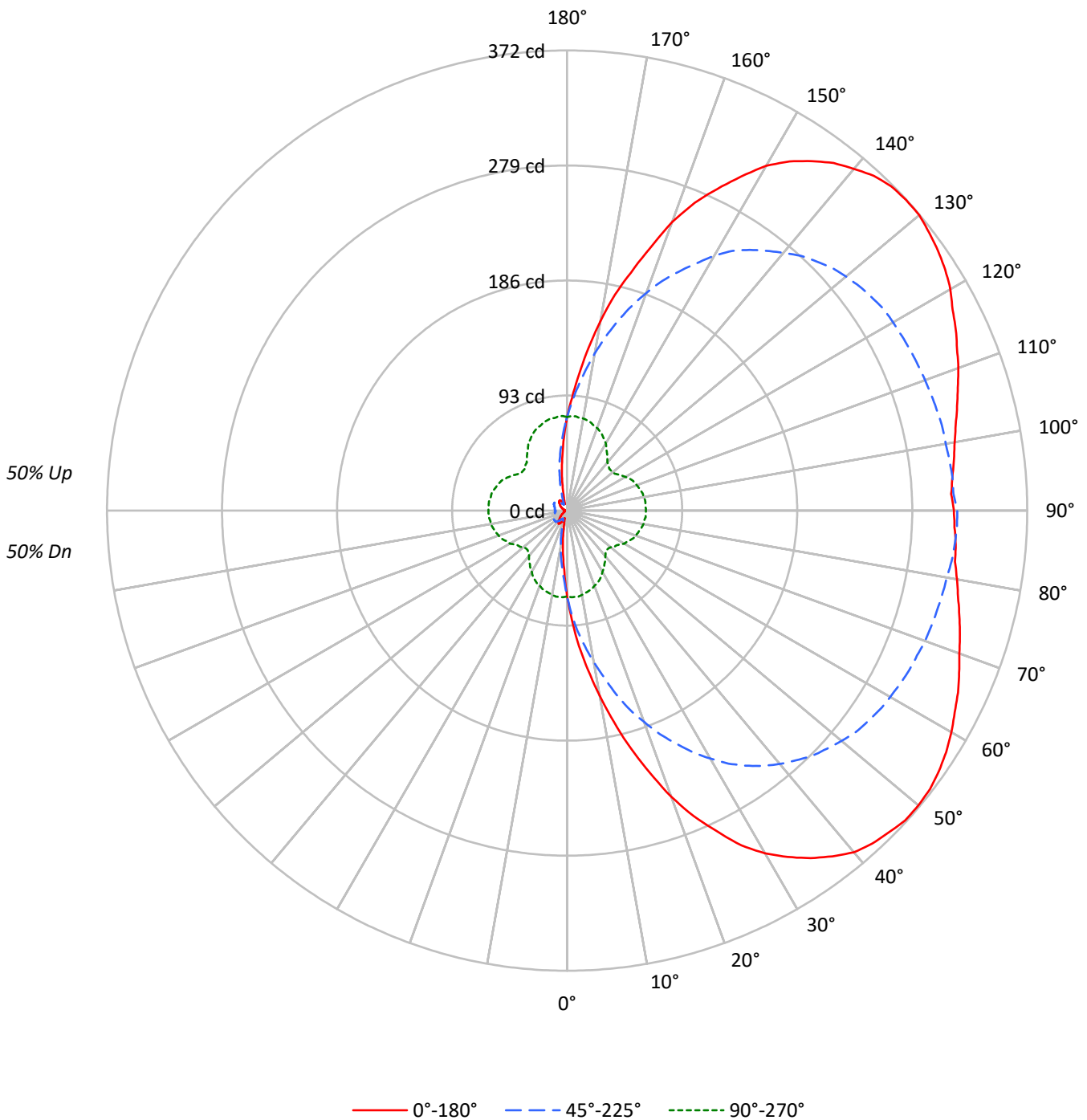
Lumens per Lamp: N/A
Luminaire Lumens: 1630.0 lumens
Efficiency: N/A
Efficacy: 74.4 lumens/watt
Spacing Criteria (0/90/45): 2.87 / 1.23 / 2.59
Luminous Opening: Rectangular w/ Sides (W: 0.92' x L: 0.29' x H: 0.92')
CIE Type: General Diffuse

Input Watts (W): 21.9
Input Voltage (V): NR
Input Current (A_{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

TEST NUMBER: P190127

CATALOG NUMBER: TRF11-LD4-20W-50-CL-BK-UNV-EDC1-CSTG

Luminous Intensity Polar Plot





TEST NUMBER: P190127

CATALOG NUMBER: TRF11-LD4-20W-50-CL-BK-UNV-EDC1-CSTG

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	80	75	70	66	62	59	54	51	48	42	40	38	32
2	83	73	65	59	76	67	60	54	55	50	45	45	40	37	35	31	29	24
3	75	63	54	47	68	58	50	43	47	41	36	38	33	29	29	26	22	18
4	68	55	45	38	61	50	42	35	41	35	29	33	28	24	25	21	18	14
5	62	48	39	32	56	44	36	29	36	30	24	29	24	20	22	18	15	12
6	56	43	34	27	51	39	31	25	32	26	21	26	21	17	20	16	13	10
7	52	38	29	23	47	35	27	21	29	23	18	23	18	14	18	14	11	8
8	48	34	26	20	44	32	24	18	26	20	15	21	16	12	16	12	9	7
9	45	31	23	18	41	29	21	16	24	18	14	19	14	11	15	11	8	6
10	42	28	21	15	38	26	19	14	22	16	12	18	13	10	14	10	7	5

AVERAGE LUMINANCE (cd/sqm):

	0°	90°	180°
0°	2786	2786	2786
5°	3477	2605	1170
10°	4003	2405	460
15°	4507	2212	188
20°	4920	2029	148
25°	5151	1872	182
30°	5285	1686	198
35°	5267	1521	184
40°	5211	1372	160
45°	5056	1287	114
50°	4893	1317	86
55°	4693	1414	59
60°	4482	1577	46
65°	4291	1706	34
70°	4123	1853	22
75°	4012	2002	34
80°	3941	2179	34
85°	3946	2364	23



TEST NUMBER: P190127

CATALOG NUMBER: TRF11-LD4-20W-50-CL-BK-UNV-EDC1-CSTG

ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	7.0	0.4
10°-20°	24.6	1.5
20°-30°	49.5	3.0
30°-40°	76.8	4.7
40°-50°	101.3	6.2
50°-60°	121.3	7.4
60°-70°	135.9	8.3
70°-80°	145.4	8.9
80°-90°	150.3	9.2
90°-100°	149.7	9.2
100°-110°	145.1	8.9
110°-120°	136.3	8.4
120°-130°	122.4	7.5
130°-140°	102.7	6.3
140°-150°	77.9	4.8
150°-160°	50.5	3.1
160°-170°	25.7	1.6
170°-180°	7.5	0.5
0°-30°	81.1	5.0
0°-40°	157.9	9.7
0°-60°	380.6	23.3
0°-90°	812.2	49.8
90°-120°	431.0	26.4
90°-150°	734.0	45.0
90°-180°	818.0	50.2
0°-180°	1630.0	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	69	69	69	69	69	
5°	110	98	70	46	37	12
15°	199	154	67	17	8	58
25°	286	208	62	7	10	133
35°	343	252	53	9	12	215
45°	368	280	45	13	8	285
55°	367	297	49	13	5	328
65°	349	305	56	12	3	346
75°	328	310	61	10	3	347
85°	315	314	64	9	2	258
90°	313	315	64	9	2	171
95°	313	313	64	10	2	257
105°	326	310	62	10	3	346
115°	347	306	58	12	5	344
125°	366	301	51	12	6	328
135°	371	285	48	10	9	286
145°	345	257	56	6	10	216
155°	287	213	67	6	6	134
165°	199	159	74	21	9	58
175°	111	100	76	54	44	12
180°	76	76	76	76	76	



TEST NUMBER: P190127

CATALOG NUMBER: TRF11-LD4-20W-50-CL-BK-UNV-EDC1-CSTG

CANDELA DISTRIBUTION (FULL):

	0°	5°	10°	15°	20°	22.5°	25°	30°	35°	40°	45°
0°	69.2	69.2	69.2	69.2	69.2	69.2	69.2	69.2	69.2	69.2	69.2
2.5°	88.5	87.6	87.6	87.6	87.6	86.7	86.7	85.8	84.8	83.9	83.9
5°	109.7	107.9	107.9	107.0	106.0	105.1	105.1	103.3	101.4	99.6	97.7
7.5°	130.0	129.1	128.2	127.3	125.4	124.5	123.6	120.8	118.0	113.4	110.7
10°	152.2	150.3	150.3	148.5	145.7	143.9	142.9	138.3	134.6	130.0	124.5
12.5°	175.2	173.4	172.4	170.6	166.9	165.1	163.2	157.7	152.2	146.6	138.3
15°	199.2	198.3	196.4	193.7	189.0	187.2	184.4	178.0	170.6	163.2	154.0
17.5°	222.2	221.3	219.5	215.8	210.3	207.5	203.8	196.4	188.1	178.9	168.8
20°	246.2	245.3	242.5	237.9	229.6	226.9	224.1	214.9	204.7	193.7	181.7
22.5°	267.4	265.6	262.8	257.3	251.8	248.1	244.4	231.5	221.3	208.4	195.5
25°	285.9	284.9	282.2	276.7	270.2	265.6	261.0	250.8	237.9	223.2	207.5
27.5°	305.2	303.4	299.7	294.2	286.8	282.2	277.6	266.5	253.6	237.9	220.4
30°	320.0	318.1	315.4	308.9	301.5	296.9	291.4	280.3	266.5	250.8	231.5
32.5°	332.0	331.1	327.4	321.8	313.5	308.9	304.3	292.3	277.6	261.0	242.5
35°	343.0	342.1	338.4	332.0	324.6	320.0	314.5	302.5	287.7	271.1	251.8
37.5°	352.3	351.3	347.7	342.1	333.8	329.2	324.6	311.7	296.9	279.4	260.1
40°	360.6	358.7	356.0	350.4	342.1	337.5	332.0	320.0	305.2	287.7	267.4
42.5°	365.2	364.3	360.6	356.0	347.7	344.0	338.4	326.4	311.7	294.2	273.9
45°	367.9	367.9	364.3	359.6	352.3	348.6	343.0	332.0	317.2	300.6	280.3
47.5°	370.7	369.8	367.0	362.4	356.0	351.3	346.7	335.7	321.8	305.2	284.9
50°	370.7	369.8	367.0	363.3	356.9	353.2	348.6	338.4	325.5	308.9	289.6
52.5°	369.8	368.9	366.1	362.4	356.0	353.2	349.5	339.4	327.4	312.6	294.2
55°	367.0	366.1	364.3	359.6	355.0	351.3	348.6	339.4	328.3	314.5	296.9
57.5°	363.3	362.4	359.6	356.9	353.2	349.5	346.7	338.4	328.3	315.4	299.7
60°	358.7	357.8	356.0	353.2	349.5	346.7	344.0	337.5	328.3	317.2	301.5
62.5°	353.2	353.2	350.4	347.7	344.9	342.1	340.3	334.7	327.4	316.3	303.4
65°	348.6	348.6	345.8	344.0	341.2	339.4	336.6	332.9	325.5	317.2	305.2
67.5°	343.0	342.1	341.2	338.4	336.6	334.7	332.9	329.2	323.7	316.3	306.2
70°	337.5	337.5	335.7	333.8	332.9	330.1	329.2	326.4	321.8	316.3	308.0
72.5°	332.9	332.0	331.1	329.2	327.4	326.4	325.5	322.8	320.0	316.3	308.9
75°	328.3	327.4	325.5	324.6	322.8	322.8	321.8	320.0	319.1	315.4	309.8
77.5°	323.7	322.8	321.8	320.9	320.0	319.1	319.1	318.1	317.2	315.4	310.8
80°	320.0	320.0	318.1	316.3	316.3	316.3	316.3	316.3	316.3	316.3	311.7
82.5°	316.3	316.3	314.5	313.5	313.5	312.6	313.5	314.5	315.4	315.4	313.5
85°	315.4	314.5	312.6	311.7	311.7	311.7	312.6	314.5	315.4	316.3	314.5
87.5°	313.5	312.6	311.7	310.8	310.8	310.8	311.7	313.5	315.4	316.3	315.4
90°	312.6	311.7	310.8	309.8	309.8	309.8	311.7	313.5	315.4	316.3	315.4
92.5°	310.8	310.8	308.9	308.0	308.9	308.9	309.8	311.7	313.5	314.5	312.6
95°	312.6	312.6	310.8	310.8	309.8	309.8	310.8	312.6	314.5	314.5	312.6
97.5°	315.4	314.5	313.5	312.6	311.7	311.7	312.6	313.5	314.5	314.5	311.7
100°	318.1	317.2	315.4	315.4	314.5	314.5	314.5	315.4	315.4	314.5	310.8
102.5°	321.8	320.9	320.0	319.1	318.1	318.1	318.1	317.2	316.3	315.4	310.8
105°	326.4	325.5	324.6	323.7	322.8	321.8	320.9	320.0	318.1	315.4	309.8
107.5°	331.1	330.1	329.2	328.3	327.4	325.5	324.6	322.8	320.0	316.3	308.9
110°	336.6	335.7	334.7	332.9	331.1	330.1	328.3	325.5	321.8	316.3	308.0



TEST NUMBER: P190127

CATALOG NUMBER: TRF11-LD4-20W-50-CL-BK-UNV-EDC1-CSTG

CANDELA DISTRIBUTION (continued):

	0°	5°	10°	15°	20°	22.5°	25°	30°	35°	40°	45°
112.5°	341.2	340.3	338.4	337.5	334.7	333.8	332.0	328.3	323.7	316.3	307.1
115°	346.7	345.8	344.0	342.1	339.4	338.4	336.6	332.0	325.5	318.1	306.2
117.5°	351.3	351.3	349.5	346.7	344.0	342.1	340.3	334.7	327.4	319.1	305.2
120°	357.8	356.9	355.0	353.2	348.6	346.7	344.0	337.5	330.1	319.1	304.3
122.5°	362.4	361.5	359.6	356.9	353.2	350.4	346.7	340.3	330.1	319.1	303.4
125°	366.1	366.1	363.3	359.6	356.0	352.3	349.5	340.3	330.1	317.2	300.6
127.5°	368.9	367.9	366.1	362.4	356.9	354.1	350.4	341.2	329.2	315.4	297.9
130°	371.6	369.8	367.0	363.3	357.8	354.1	350.4	340.3	328.3	312.6	294.2
132.5°	371.6	370.7	367.9	364.3	357.8	354.1	349.5	339.4	325.5	308.9	290.5
135°	370.7	369.8	367.0	362.4	356.0	351.3	346.7	335.7	321.8	305.2	284.9
137.5°	367.0	366.1	362.4	358.7	351.3	347.7	342.1	330.1	316.3	299.7	279.4
140°	360.6	359.6	356.9	352.3	344.9	340.3	335.7	323.7	308.9	291.4	272.0
142.5°	354.1	353.2	349.5	344.9	336.6	332.9	327.4	315.4	301.5	284.0	264.7
145°	344.9	344.0	340.3	335.7	328.3	323.7	319.1	306.2	292.3	275.7	257.3
147.5°	334.7	332.9	330.1	325.5	318.1	313.5	308.9	296.9	283.1	266.5	249.0
150°	321.8	320.9	317.2	312.6	305.2	300.6	296.0	284.0	271.1	255.4	237.9
152.5°	304.3	304.3	300.6	296.9	290.5	285.9	280.3	269.3	257.3	242.5	225.0
155°	286.8	286.8	284.0	279.4	273.9	269.3	264.7	254.5	243.5	227.8	213.0
157.5°	269.3	268.4	265.6	261.0	256.4	251.8	248.1	237.9	225.9	213.9	201.0
160°	248.1	248.1	245.3	241.6	236.1	230.5	226.9	218.6	210.3	198.3	187.2
162.5°	222.2	222.2	220.4	216.7	213.9	210.3	206.6	199.2	191.8	182.6	173.4
165°	199.2	199.2	197.3	194.6	191.8	189.0	186.3	180.7	174.3	166.0	158.6
167.5°	178.9	177.1	175.2	173.4	171.5	168.8	166.9	161.4	156.8	150.3	143.9
170°	155.8	154.0	153.1	151.2	150.3	147.5	146.6	142.9	139.2	133.7	129.1
172.5°	132.8	130.9	130.9	129.1	129.1	127.3	126.3	123.6	121.7	118.0	114.3
175°	110.7	109.7	109.7	108.8	108.8	107.0	107.0	105.1	104.2	102.4	100.5
177.5°	91.3	90.4	90.4	90.4	90.4	89.5	90.4	89.5	89.5	88.5	87.6
180°	75.6	75.6	75.6	75.6	75.6	75.6	75.6	75.6	75.6	75.6	75.6



TEST NUMBER: P190127

CATALOG NUMBER: TRF11-LD4-20W-50-CL-BK-UNV-EDC1-CSTG

CANDELA DISTRIBUTION (continued):

	50°	55°	60°	65°	67.5°	70°	75°	80°	85°	90°	95°
0°	69.2	69.2	69.2	69.2	69.2	69.2	69.2	69.2	69.2	69.2	69.2
2.5°	82.1	81.2	80.2	78.4	77.5	76.5	75.6	73.8	71.9	70.1	68.2
5°	95.0	91.3	89.5	86.7	84.8	83.0	80.2	76.5	73.8	70.1	67.3
7.5°	107.0	102.4	98.7	94.1	91.3	88.5	83.9	79.3	74.7	70.1	65.5
10°	119.0	112.5	107.0	100.5	97.7	94.1	87.6	81.2	74.7	69.2	63.6
12.5°	130.9	123.6	116.2	107.9	104.2	99.6	91.3	83.0	75.6	68.2	60.9
15°	144.8	135.6	125.4	115.3	110.7	105.1	95.0	85.8	76.5	67.3	59.0
17.5°	157.7	145.7	133.7	121.7	116.2	109.7	97.7	86.7	76.5	66.4	57.2
20°	168.8	155.8	142.0	128.2	120.8	114.3	100.5	87.6	75.6	64.6	55.3
22.5°	180.7	165.1	149.4	133.7	126.3	118.0	103.3	88.5	75.6	63.6	52.6
25°	191.8	175.2	156.8	139.2	130.0	121.7	104.2	88.5	74.7	61.8	50.7
27.5°	202.9	183.5	164.1	143.9	134.6	124.5	106.0	88.5	73.8	59.9	48.0
30°	212.1	191.8	170.6	148.5	137.4	127.3	106.0	87.6	71.9	57.2	45.2
32.5°	220.4	199.2	175.2	152.2	140.2	128.2	107.0	86.7	70.1	55.3	43.3
35°	227.8	204.7	180.7	154.9	142.9	130.0	106.0	85.8	67.3	52.6	40.6
37.5°	237.0	211.2	185.4	158.6	144.8	131.9	106.0	83.9	65.5	50.7	37.8
40°	244.4	216.7	190.0	161.4	147.5	132.8	106.0	83.0	63.6	48.0	36.0
42.5°	250.8	222.2	194.6	165.1	149.4	134.6	107.0	82.1	61.8	46.1	34.1
45°	256.4	227.8	199.2	168.8	153.1	137.4	107.9	82.1	61.8	45.2	33.2
47.5°	261.0	234.2	203.8	172.4	156.8	140.2	109.7	83.9	61.8	45.2	33.2
50°	266.5	240.7	208.4	177.1	161.4	144.8	113.4	85.8	63.6	46.1	33.2
52.5°	271.1	245.3	213.9	182.6	166.0	149.4	116.2	88.5	65.5	48.0	34.1
55°	275.7	249.9	219.5	188.1	171.5	154.0	120.8	92.2	68.2	48.9	34.1
57.5°	279.4	255.4	224.1	192.7	176.1	159.5	125.4	95.9	71.0	50.7	35.0
60°	283.1	260.1	229.6	199.2	182.6	165.1	130.9	100.5	74.7	53.5	36.0
62.5°	285.9	263.7	236.1	204.7	188.1	170.6	137.4	105.1	77.5	54.4	36.9
65°	289.6	268.4	242.5	211.2	194.6	178.0	142.9	109.7	81.2	56.3	36.9
67.5°	292.3	273.0	248.1	216.7	201.0	183.5	148.5	114.3	83.9	58.1	37.8
70°	295.1	277.6	253.6	222.2	206.6	189.0	154.0	118.0	86.7	59.0	37.8
72.5°	297.9	281.3	259.1	228.7	212.1	194.6	158.6	121.7	88.5	59.9	37.8
75°	299.7	284.9	263.7	234.2	217.6	200.1	162.3	125.4	90.4	60.9	37.8
77.5°	302.5	288.6	267.4	239.8	222.2	204.7	166.9	128.2	92.2	61.8	37.8
80°	304.3	291.4	271.1	243.5	225.9	208.4	169.7	130.0	94.1	62.7	37.8
82.5°	307.1	294.2	274.8	247.1	228.7	211.2	172.4	131.9	95.0	62.7	38.7
85°	308.9	296.9	277.6	249.9	231.5	213.9	174.3	133.7	95.9	63.6	38.7
87.5°	309.8	298.8	279.4	251.8	233.3	215.8	176.1	134.6	96.8	63.6	38.7
90°	310.8	299.7	280.3	252.7	234.2	215.8	177.1	135.6	96.8	63.6	38.7
92.5°	307.1	296.0	276.7	249.9	232.4	213.0	174.3	133.7	95.9	63.6	38.7
95°	306.2	294.2	274.8	248.1	230.5	212.1	173.4	132.8	95.9	63.6	38.7
97.5°	305.2	292.3	272.0	245.3	226.9	209.3	171.5	131.9	95.0	63.6	38.7
100°	303.4	289.6	269.3	241.6	224.1	206.6	168.8	130.0	94.1	62.7	38.7
102.5°	301.5	286.8	265.6	237.9	220.4	203.8	166.0	128.2	92.2	62.7	38.7
105°	299.7	284.0	261.9	233.3	216.7	199.2	162.3	125.4	91.3	61.8	38.7
107.5°	297.9	280.3	258.2	227.8	211.2	194.6	158.6	122.6	89.5	60.9	38.7
110°	295.1	277.6	253.6	222.2	206.6	190.0	154.0	119.0	86.7	59.9	38.7



TEST NUMBER: P190127

CATALOG NUMBER: TRF11-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°	293.2	273.0	249.0	217.6	201.0	184.4	148.5	115.3	84.8	59.0	38.7
115°	290.5	270.2	244.4	212.1	195.5	178.9	143.9	110.7	82.1	58.1	38.7
117.5°	288.6	266.5	238.8	206.6	190.0	173.4	138.3	107.0	79.3	56.3	37.8
120°	285.9	262.8	234.2	202.0	185.4	167.8	133.7	102.4	75.6	54.4	37.8
122.5°	283.1	259.1	228.7	196.4	179.8	162.3	128.2	97.7	72.9	52.6	36.9
125°	279.4	254.5	224.1	191.8	174.3	157.7	123.6	94.1	70.1	50.7	36.0
127.5°	275.7	249.9	218.6	186.3	169.7	153.1	119.9	91.3	67.3	48.9	35.0
130°	271.1	246.2	213.9	181.7	165.1	148.5	117.1	88.5	65.5	48.0	35.0
132.5°	266.5	241.6	209.3	178.0	161.4	145.7	114.3	86.7	64.6	48.0	35.0
135°	261.9	235.2	204.7	174.3	158.6	142.9	112.5	86.7	64.6	48.0	36.0
137.5°	256.4	228.7	200.1	170.6	155.8	140.2	111.6	86.7	65.5	49.8	36.9
140°	249.9	223.2	195.5	166.9	152.2	138.3	111.6	87.6	67.3	50.7	38.7
142.5°	242.5	216.7	190.9	164.1	150.3	137.4	111.6	88.5	69.2	53.5	40.6
145°	234.2	211.2	186.3	161.4	148.5	135.6	111.6	90.4	71.9	56.3	43.3
147.5°	225.9	204.7	181.7	157.7	146.6	134.6	112.5	92.2	74.7	59.0	47.0
150°	217.6	198.3	176.1	154.0	143.9	132.8	112.5	94.1	76.5	62.7	49.8
152.5°	207.5	189.0	169.7	149.4	140.2	130.0	111.6	94.1	78.4	64.6	52.6
155°	197.3	180.7	163.2	144.8	136.5	127.3	110.7	95.0	80.2	67.3	55.3
157.5°	187.2	171.5	155.8	140.2	131.9	124.5	108.8	95.0	81.2	69.2	58.1
160°	175.2	162.3	148.5	133.7	127.3	120.8	107.0	94.1	82.1	71.0	60.9
162.5°	162.3	151.2	139.2	127.3	121.7	115.3	104.2	93.1	82.1	71.9	62.7
165°	149.4	140.2	130.0	119.9	115.3	110.7	100.5	91.3	82.1	73.8	65.5
167.5°	137.4	130.0	121.7	113.4	109.7	105.1	97.7	89.5	82.1	74.7	68.2
170°	124.5	118.0	112.5	106.0	103.3	99.6	94.1	87.6	81.2	75.6	70.1
172.5°	111.6	107.0	102.4	97.7	95.9	94.1	89.5	84.8	80.2	75.6	71.9
175°	98.7	95.9	93.1	90.4	89.5	87.6	84.8	82.1	79.3	76.5	72.9
177.5°	86.7	85.8	84.8	83.9	83.0	82.1	81.2	79.3	78.4	76.5	75.6
180°	75.6	75.6	75.6	75.6	75.6	75.6	75.6	75.6	75.6	75.6	75.6



TEST NUMBER: P190127

CATALOG NUMBER: TRF11-LD4-20W-50-CL-BK-UNV-EDC1-CSTG

CANDELA DISTRIBUTION (continued):

	100°	105°	110°	112.5°	115°	120°	125°	130°	135°	140°	145°
0°	69.2	69.2	69.2	69.2	69.2	69.2	69.2	69.2	69.2	69.2	69.2
2.5°	66.4	65.5	63.6	62.7	61.8	60.9	59.0	57.2	56.3	55.3	54.4
5°	63.6	60.9	58.1	57.2	55.3	53.5	50.7	48.9	46.1	44.3	43.3
7.5°	60.9	57.2	53.5	51.6	48.9	46.1	43.3	40.6	37.8	35.0	33.2
10°	58.1	52.6	48.0	46.1	43.3	39.7	36.0	33.2	29.5	27.7	24.9
12.5°	55.3	48.9	43.3	40.6	38.7	34.1	29.5	25.8	23.1	20.3	17.5
15°	52.6	45.2	39.7	36.9	34.1	28.6	24.0	20.3	16.6	14.8	12.9
17.5°	48.9	41.5	35.0	32.3	29.5	24.0	19.4	15.7	12.9	11.1	9.2
20°	46.1	38.7	31.4	27.7	24.9	19.4	14.8	12.0	10.1	8.3	7.4
22.5°	43.3	35.0	27.7	24.9	21.2	15.7	12.0	9.2	8.3	7.4	7.4
25°	40.6	32.3	24.9	21.2	18.4	12.9	10.1	8.3	7.4	7.4	7.4
27.5°	37.8	29.5	22.1	18.4	15.7	11.1	8.3	7.4	7.4	8.3	8.3
30°	35.0	26.7	19.4	15.7	13.8	9.2	7.4	7.4	7.4	9.2	10.1
32.5°	33.2	24.9	17.5	13.8	12.0	8.3	6.5	7.4	8.3	10.1	11.1
35°	30.4	22.1	15.7	12.9	10.1	7.4	7.4	8.3	9.2	11.1	12.0
37.5°	28.6	20.3	13.8	12.0	9.2	7.4	7.4	9.2	10.1	12.0	12.0
40°	26.7	19.4	12.9	11.1	8.3	7.4	8.3	10.1	11.1	12.0	12.9
42.5°	25.8	18.4	12.0	10.1	8.3	7.4	9.2	11.1	12.0	12.9	12.9
45°	24.9	17.5	11.1	9.2	7.4	8.3	10.1	12.0	12.9	12.9	12.9
47.5°	24.0	16.6	10.1	8.3	7.4	8.3	10.1	12.0	12.9	12.9	12.0
50°	24.0	15.7	9.2	7.4	7.4	9.2	11.1	12.9	12.9	12.9	12.0
52.5°	23.1	14.8	9.2	7.4	7.4	9.2	12.0	12.9	12.9	12.0	11.1
55°	23.1	13.8	8.3	7.4	7.4	10.1	12.0	13.8	12.9	12.0	10.1
57.5°	23.1	13.8	8.3	7.4	8.3	11.1	12.9	13.8	12.9	11.1	10.1
60°	23.1	12.9	7.4	7.4	8.3	11.1	12.9	13.8	12.9	11.1	9.2
62.5°	22.1	12.0	7.4	7.4	9.2	11.1	12.9	13.8	12.0	10.1	8.3
65°	22.1	11.1	7.4	8.3	9.2	12.0	13.8	12.9	12.0	10.1	8.3
67.5°	22.1	11.1	7.4	8.3	9.2	12.0	13.8	12.9	11.1	9.2	7.4
70°	21.2	11.1	7.4	8.3	10.1	12.0	13.8	12.9	11.1	9.2	7.4
72.5°	21.2	10.1	7.4	8.3	10.1	12.9	13.8	12.9	11.1	8.3	7.4
75°	21.2	10.1	7.4	8.3	10.1	12.9	13.8	12.9	10.1	8.3	6.5
77.5°	20.3	10.1	7.4	9.2	10.1	12.9	13.8	12.0	10.1	8.3	6.5
80°	20.3	10.1	7.4	9.2	10.1	12.9	13.8	12.0	10.1	8.3	6.5
82.5°	20.3	9.2	7.4	9.2	10.1	12.9	13.8	12.0	10.1	7.4	6.5
85°	20.3	9.2	7.4	9.2	10.1	12.9	13.8	12.0	9.2	7.4	6.5
87.5°	20.3	9.2	7.4	9.2	10.1	12.9	12.9	12.0	9.2	7.4	5.5
90°	20.3	9.2	7.4	9.2	10.1	12.9	12.9	12.0	9.2	7.4	5.5
92.5°	21.2	10.1	7.4	9.2	10.1	12.9	12.9	12.0	10.1	8.3	6.5
95°	21.2	10.1	7.4	8.3	10.1	12.9	12.9	12.0	10.1	8.3	6.5
97.5°	21.2	10.1	7.4	8.3	10.1	12.0	12.9	12.0	10.1	8.3	6.5
100°	21.2	10.1	7.4	8.3	9.2	12.0	12.9	12.0	10.1	8.3	6.5
102.5°	21.2	10.1	7.4	8.3	9.2	12.0	12.9	12.0	10.1	8.3	7.4
105°	21.2	10.1	6.5	7.4	9.2	11.1	12.9	12.0	10.1	8.3	7.4
107.5°	22.1	10.1	6.5	7.4	8.3	11.1	12.0	12.0	11.1	9.2	7.4
110°	22.1	11.1	6.5	7.4	8.3	11.1	12.0	12.0	11.1	9.2	8.3



TEST NUMBER: P190127

CATALOG NUMBER: TRF11-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°	23.1	11.1	6.5	6.5	7.4	10.1	12.0	12.0	11.1	10.1	8.3
115°	23.1	12.0	7.4	6.5	7.4	10.1	12.0	12.0	12.0	10.1	9.2
117.5°	24.0	12.9	7.4	6.5	7.4	9.2	11.1	12.0	12.0	11.1	9.2
120°	24.0	13.8	7.4	6.5	7.4	9.2	11.1	12.0	12.0	11.1	10.1
122.5°	24.0	14.8	8.3	6.5	6.5	8.3	10.1	12.0	12.0	11.1	10.1
125°	24.0	14.8	8.3	6.5	6.5	8.3	10.1	11.1	12.0	11.1	10.1
127.5°	24.9	15.7	9.2	7.4	6.5	7.4	9.2	11.1	11.1	11.1	11.1
130°	24.9	16.6	10.1	7.4	6.5	7.4	8.3	10.1	11.1	11.1	11.1
132.5°	25.8	17.5	11.1	8.3	6.5	6.5	8.3	9.2	10.1	11.1	11.1
135°	25.8	18.4	12.0	9.2	7.4	6.5	7.4	8.3	10.1	10.1	11.1
137.5°	27.7	19.4	12.9	10.1	8.3	5.5	6.5	8.3	9.2	10.1	10.1
140°	28.6	20.3	13.8	11.1	9.2	6.5	6.5	7.4	8.3	9.2	10.1
142.5°	30.4	22.1	15.7	12.9	10.1	6.5	5.5	6.5	7.4	8.3	9.2
145°	33.2	24.9	17.5	13.8	11.1	7.4	5.5	5.5	6.5	7.4	8.3
147.5°	36.0	26.7	19.4	15.7	12.9	9.2	6.5	5.5	6.5	6.5	7.4
150°	38.7	29.5	22.1	18.4	15.7	10.1	7.4	5.5	5.5	6.5	6.5
152.5°	41.5	33.2	24.9	21.2	17.5	12.9	9.2	6.5	5.5	5.5	6.5
155°	45.2	36.0	28.6	24.9	21.2	15.7	11.1	8.3	6.5	5.5	5.5
157.5°	48.0	39.7	32.3	28.6	24.9	19.4	13.8	11.1	8.3	6.5	5.5
160°	51.6	43.3	36.0	32.3	29.5	23.1	18.4	13.8	11.1	9.2	7.4
162.5°	54.4	47.0	39.7	36.9	33.2	27.7	23.1	18.4	14.8	12.9	10.1
165°	58.1	50.7	44.3	41.5	38.7	33.2	28.6	24.0	21.2	17.5	15.7
167.5°	60.9	54.4	48.9	46.1	44.3	39.7	35.0	31.4	27.7	24.9	22.1
170°	64.6	59.0	54.4	51.6	49.8	46.1	41.5	38.7	36.0	33.2	30.4
172.5°	67.3	62.7	59.9	57.2	56.3	52.6	48.9	46.1	44.3	41.5	39.7
175°	70.1	67.3	65.5	63.6	62.7	59.9	57.2	55.3	53.5	51.6	49.8
177.5°	73.8	71.9	71.0	70.1	70.1	68.2	67.3	65.5	64.6	63.6	62.7
180°	75.6	75.6	75.6	75.6	75.6	75.6	75.6	75.6	75.6	75.6	75.6



TEST NUMBER: P190127

CATALOG NUMBER: TRF11-LD4-20W-50-CL-BK-UNV-EDC1-CSTG

CANDELA DISTRIBUTION (continued):

	150°	155°	157.5°	160°	165°	170°	175°	180°
0°	69.2	69.2	69.2	69.2	69.2	69.2	69.2	69.2
2.5°	52.6	51.6	51.6	51.6	49.8	49.8	49.8	49.8
5°	41.5	40.6	39.7	38.7	37.8	36.9	36.9	36.9
7.5°	31.4	30.4	29.5	28.6	27.7	26.7	26.7	25.8
10°	23.1	21.2	20.3	20.3	18.4	17.5	17.5	17.5
12.5°	15.7	14.8	13.8	13.8	12.9	12.0	12.0	11.1
15°	11.1	10.1	10.1	9.2	9.2	8.3	8.3	8.3
17.5°	8.3	7.4	7.4	7.4	7.4	6.5	6.5	6.5
20°	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4
22.5°	7.4	8.3	8.3	8.3	8.3	9.2	9.2	9.2
25°	8.3	9.2	9.2	9.2	10.1	10.1	10.1	10.1
27.5°	9.2	10.1	10.1	11.1	11.1	11.1	12.0	11.1
30°	11.1	11.1	12.0	12.0	12.0	12.0	12.0	12.0
32.5°	12.0	12.0	12.0	12.9	12.9	12.9	12.9	12.9
35°	12.0	12.9	12.9	12.9	12.9	12.0	12.0	12.0
37.5°	12.9	12.9	12.9	12.0	12.0	12.0	12.0	12.0
40°	12.9	12.0	12.0	12.0	11.1	11.1	11.1	11.1
42.5°	12.0	12.0	11.1	11.1	10.1	10.1	9.2	9.2
45°	12.0	11.1	10.1	10.1	9.2	8.3	8.3	8.3
47.5°	11.1	10.1	9.2	9.2	8.3	7.4	7.4	7.4
50°	10.1	9.2	8.3	8.3	7.4	6.5	6.5	6.5
52.5°	9.2	8.3	7.4	7.4	6.5	5.5	5.5	5.5
55°	9.2	7.4	6.5	6.5	5.5	4.6	4.6	4.6
57.5°	8.3	6.5	6.5	5.5	4.6	4.6	3.7	3.7
60°	7.4	6.5	5.5	5.5	4.6	3.7	3.7	3.7
62.5°	7.4	5.5	5.5	4.6	3.7	3.7	2.8	2.8
65°	6.5	5.5	4.6	4.6	3.7	2.8	2.8	2.8
67.5°	6.5	4.6	4.6	3.7	3.7	2.8	2.8	2.8
70°	5.5	4.6	4.6	3.7	3.7	2.8	2.8	1.8
72.5°	5.5	4.6	4.6	3.7	2.8	2.8	2.8	2.8
75°	5.5	4.6	3.7	3.7	2.8	2.8	2.8	2.8
77.5°	5.5	4.6	3.7	3.7	2.8	2.8	2.8	1.8
80°	5.5	4.6	3.7	3.7	2.8	2.8	2.8	2.8
82.5°	4.6	3.7	3.7	3.7	2.8	2.8	1.8	2.8
85°	4.6	3.7	3.7	3.7	2.8	1.8	1.8	1.8
87.5°	4.6	3.7	3.7	2.8	2.8	1.8	1.8	1.8
90°	4.6	3.7	3.7	2.8	2.8	1.8	1.8	1.8
92.5°	5.5	4.6	3.7	3.7	2.8	2.8	1.8	1.8
95°	5.5	4.6	3.7	3.7	2.8	2.8	1.8	1.8
97.5°	5.5	4.6	3.7	3.7	3.7	2.8	2.8	2.8
100°	5.5	4.6	4.6	3.7	3.7	2.8	1.8	1.8
102.5°	5.5	4.6	4.6	3.7	3.7	2.8	2.8	1.8
105°	6.5	4.6	4.6	4.6	3.7	2.8	2.8	2.8
107.5°	6.5	5.5	4.6	4.6	3.7	3.7	2.8	2.8
110°	6.5	5.5	5.5	4.6	4.6	3.7	3.7	3.7



TEST NUMBER: P190127

CATALOG NUMBER: TRF11-LD4-20W-50-CL-BK-UNV-EDC1-CSTG

CANDELA DISTRIBUTION (continued):

	150°	155°	157.5°	160°	165°	170°	175°	180°
112.5°	7.4	5.5	5.5	5.5	4.6	3.7	3.7	3.7
115°	7.4	6.5	6.5	5.5	5.5	4.6	4.6	4.6
117.5°	8.3	7.4	6.5	6.5	5.5	5.5	5.5	4.6
120°	8.3	7.4	7.4	6.5	6.5	5.5	5.5	5.5
122.5°	9.2	8.3	7.4	7.4	6.5	6.5	6.5	6.5
125°	9.2	8.3	8.3	7.4	7.4	6.5	6.5	6.5
127.5°	10.1	9.2	8.3	8.3	7.4	7.4	7.4	7.4
130°	10.1	10.1	9.2	9.2	8.3	8.3	8.3	7.4
132.5°	11.1	10.1	10.1	9.2	9.2	8.3	8.3	8.3
135°	11.1	10.1	10.1	10.1	9.2	9.2	9.2	9.2
137.5°	11.1	11.1	10.1	10.1	10.1	10.1	10.1	9.2
140°	10.1	10.1	10.1	10.1	10.1	10.1	10.1	10.1
142.5°	10.1	10.1	10.1	10.1	10.1	10.1	10.1	10.1
145°	9.2	9.2	10.1	10.1	10.1	10.1	10.1	10.1
147.5°	8.3	9.2	9.2	9.2	9.2	9.2	9.2	9.2
150°	7.4	7.4	8.3	8.3	8.3	8.3	8.3	9.2
152.5°	6.5	7.4	7.4	7.4	7.4	7.4	7.4	7.4
155°	5.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5
157.5°	5.5	5.5	5.5	5.5	5.5	6.5	5.5	6.5
160°	6.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
162.5°	9.2	8.3	7.4	7.4	6.5	6.5	6.5	6.5
165°	13.8	12.0	11.1	11.1	10.1	9.2	9.2	9.2
167.5°	20.3	18.4	17.5	16.6	15.7	14.8	14.8	13.8
170°	28.6	26.7	25.8	24.9	24.0	23.1	23.1	22.1
172.5°	37.8	36.0	36.0	35.0	34.1	33.2	33.2	32.3
175°	48.9	48.0	47.0	46.1	45.2	45.2	45.2	44.3
177.5°	61.8	60.9	60.9	60.9	59.9	59.9	59.0	59.0
180°	75.6	75.6	75.6	75.6	75.6	75.6	75.6	75.6

(END OF REPORT)