

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: NEO-RAY

Report Number: P231615

Luminaire Tested: **S123-DR-LO-27-X-0048-1-U-DD-4-W**

Issue Date: 3/3/2020

Test Information

Test Method: LM-79-08
Report Number: P231615
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (P33913)
Test Lab: INNOVATION CENTER-P3
Issue Date: 3/3/2020
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: NEO-RAY
Catalog Number: S123-DR-LO-27-X-0048-1-U-DD-4-W
Description: DEFINE 3 LED LINEAR DIRECT RECESSED LED LUMINAIRE WITH DROP LENS.
Light Source: 2700K CCT, 90 CRI LEDS
Ballast/Driver: ELECTRONIC DRIVER

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 1009.3 lumens
Efficiency: N/A
Efficacy: 74.2 lumens/watt
Spacing Criteria (0/90/45): 1.19 / 1.25 / 1.37
Luminous Opening: Rectangular w/ Sides (W: 0.22' x L: 3.92' x H: 0.08')
CIE Type: Direct

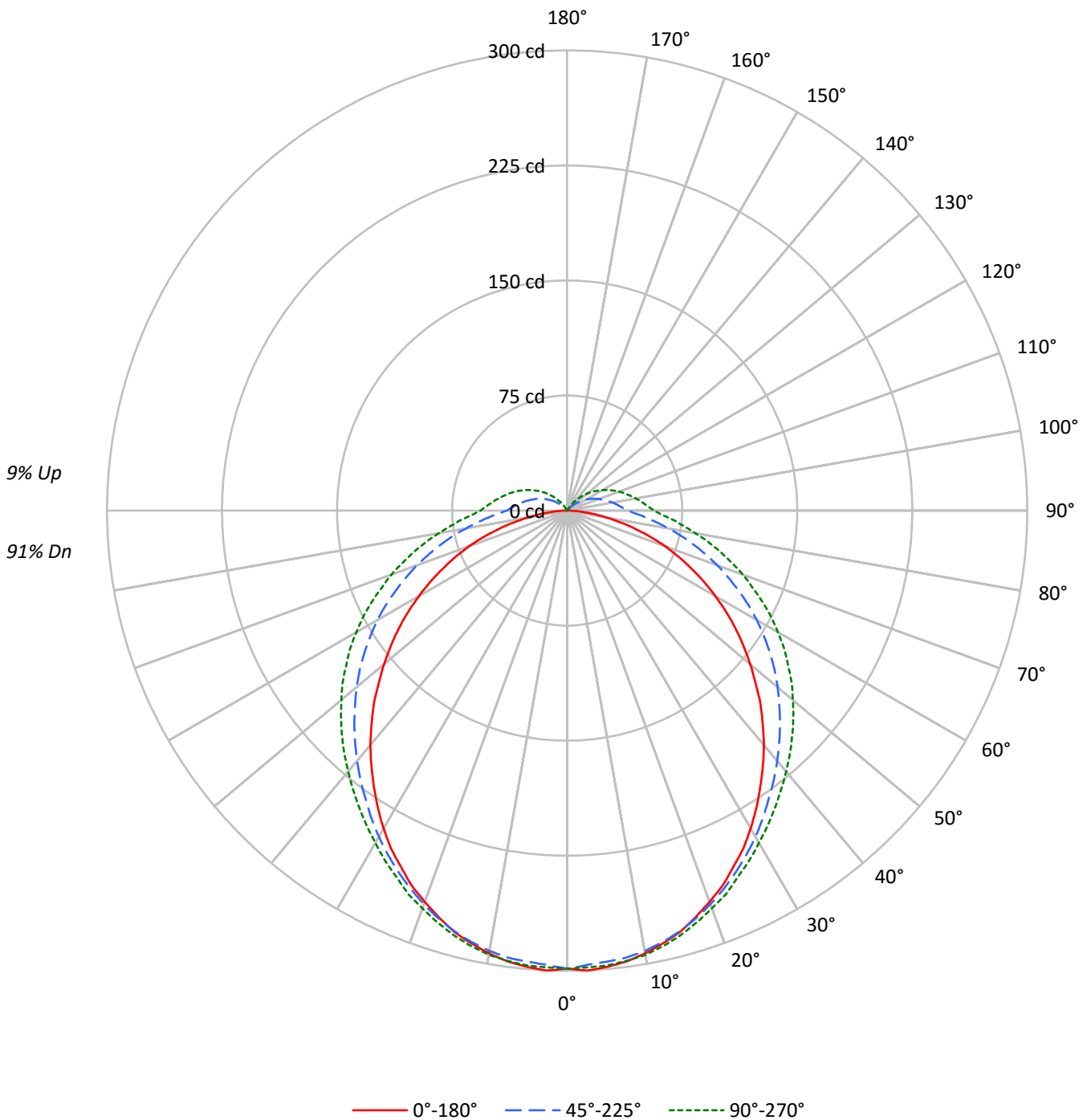
Input Watts (W): 13.6
Input Voltage (V): 120
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



TEST NUMBER: P231615

CATALOG NUMBER: S123-DR-LO-27-X-0048-1-U-DD-4-W

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	117	117	117	117	113	113	113	113	106	106	106	100	100	100	94	94	94	91
1	105	100	95	90	101	96	92	88	90	87	84	85	82	79	80	78	76	73
2	95	86	79	72	91	83	76	71	78	73	68	74	69	65	69	66	62	59
3	86	75	66	59	83	73	65	58	68	62	56	64	59	54	61	56	52	49
4	79	66	57	50	76	64	56	49	61	53	48	57	51	46	54	49	44	42
5	72	59	50	43	70	57	49	42	54	47	41	51	45	40	49	43	38	36
6	67	53	44	37	64	52	43	37	49	41	36	46	40	35	44	38	34	31
7	62	48	39	33	59	47	38	32	44	37	31	42	36	31	40	34	30	28
8	57	44	35	29	55	43	34	29	41	33	28	39	32	27	37	31	27	25
9	54	40	32	26	52	39	31	26	37	30	25	36	29	25	34	28	24	22
10	50	37	29	24	49	36	28	23	35	28	23	33	27	22	32	26	22	20

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	3675	3675	3675
5°	3682	3560	3562
10°	3649	3472	3447
15°	3603	3366	3319
20°	3527	3247	3183
25°	3448	3126	3048
30°	3359	3005	2924
35°	3251	2881	2815
40°	3151	2773	2718
45°	3039	2672	2630
50°	2909	2574	2546
55°	2790	2474	2461
60°	2647	2370	2373
65°	2490	2245	2270
70°	2315	2119	2166
75°	2022	1985	2049
80°	1638	1834	1929
85°	1136	1734	1859



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	28.2	2.8
10°-20°	80.4	8.0
20°-30°	120.2	11.9
30°-40°	143.6	14.2
40°-50°	150.6	14.9
50°-60°	142.0	14.1
60°-70°	118.9	11.8
70°-80°	85.5	8.5
80°-90°	51.6	5.1
90°-100°	33.3	3.3
100°-110°	24.4	2.4
110°-120°	16.4	1.6
120°-130°	9.4	0.9
130°-140°	4.1	0.4
140°-150°	0.8	0.1
150°-160°	0.0	0.0
160°-170°	0.0	0.0
170°-180°	0.0	0.0
0°-30°	228.8	22.7
0°-40°	372.4	36.9
0°-60°	665.0	65.9
0°-90°	920.9	91.2
90°-120°	74.1	7.3
90°-150°	88.3	8.8
90°-180°	88.0	8.7
0°-180°	1009.3	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	299	299	299	299	299	
5°	299	298	295	298	298	28
15°	284	284	284	287	286	80
25°	256	259	260	264	264	118
35°	220	225	229	235	236	137
45°	178	186	196	205	208	137
55°	134	146	161	173	176	120
65°	89	105	123	137	140	89
75°	46	64	85	98	103	49
85°	10	30	51	65	69	12
90°	0	19	39	52	56	1
95°	0	15	34	47	50	0
105°	0	9	26	37	40	0
115°	0	4	18	28	31	0
125°	0	0	11	19	22	0
135°	0	0	4	10	13	0
145°	0	0	0	2	4	0
155°	0	0	0	0	0	0
165°	0	0	0	0	0	0
175°	0	0	0	0	0	0
180°	0	0	0	0	0	0



TEST NUMBER: P231615

CATALOG NUMBER: S123-DR-LO-27-X-0048-1-U-DD-4-W

CANDELA DISTRIBUTION (FULL):

	0°	5°	10°	15°	20°	25°	30°	35°	40°	45°	50°
0°	298.6	298.6	298.6	298.6	298.6	298.6	298.6	298.6	298.6	298.6	298.6
2.5°	300.2	299.4	298.6	298.6	299.0	299.0	299.0	298.1	297.7	296.5	296.5
5°	298.6	297.7	296.9	297.3	297.3	297.7	297.7	297.3	296.5	295.2	296.1
7.5°	296.5	295.6	294.8	294.8	295.2	295.6	295.6	295.2	294.8	294.0	294.4
10°	293.1	292.3	291.5	291.5	291.9	292.7	293.1	292.7	292.3	291.5	291.9
12.5°	289.0	288.1	287.3	288.1	288.5	289.4	289.4	289.4	289.0	288.1	289.0
15°	284.4	283.1	282.7	283.1	283.9	284.8	285.2	284.8	284.8	283.9	284.8
17.5°	278.1	277.3	276.8	277.7	278.5	279.4	280.2	279.8	279.8	278.9	279.8
20°	271.4	270.6	270.6	271.4	272.3	273.5	273.9	273.9	273.9	273.1	274.3
22.5°	264.7	263.5	263.5	264.3	266.0	266.8	267.2	267.2	267.2	266.8	268.5
25°	256.4	255.6	256.0	256.8	258.1	259.3	260.1	260.1	260.1	260.1	261.4
27.5°	248.5	247.2	247.6	248.9	250.5	251.4	252.6	252.6	252.6	253.0	254.3
30°	239.3	238.4	239.3	240.5	242.2	243.4	244.3	245.1	245.1	245.5	247.2
32.5°	229.7	229.2	230.1	231.8	232.6	234.7	235.5	235.9	236.8	237.6	238.8
35°	219.6	219.2	220.5	222.1	223.8	225.5	226.7	227.2	228.4	229.2	231.3
37.5°	209.6	209.6	210.9	212.1	214.2	216.3	217.6	218.4	219.2	221.3	223.4
40°	199.6	199.2	200.4	202.1	204.2	206.7	207.9	209.2	210.5	213.0	215.0
42.5°	188.7	188.7	190.4	192.5	195.0	197.5	198.8	199.6	202.1	204.6	206.7
45°	178.3	178.3	180.0	182.5	185.0	187.5	189.6	191.2	193.8	196.3	198.3
47.5°	166.6	167.4	169.1	171.6	174.5	177.5	179.6	182.1	185.0	187.5	190.0
50°	155.8	156.2	159.1	161.6	164.5	167.9	170.4	172.9	176.2	179.1	182.1
52.5°	144.9	145.7	148.2	151.2	154.5	157.4	161.2	164.1	167.0	170.4	173.3
55°	134.0	134.5	137.8	141.1	144.1	147.8	151.2	154.9	158.3	161.2	164.1
57.5°	122.8	124.0	126.5	129.9	133.6	137.8	141.6	144.9	148.2	152.0	155.3
60°	111.5	113.2	116.1	119.4	123.2	127.8	132.0	135.7	139.1	142.8	146.1
62.5°	100.6	101.9	105.2	108.6	112.7	117.3	121.9	125.7	129.4	133.2	137.0
65°	89.4	91.9	94.4	98.1	102.7	107.3	111.9	116.1	119.8	123.2	126.9
67.5°	78.5	80.2	83.9	87.7	92.3	97.3	101.5	106.1	110.2	113.6	116.9
70°	68.1	69.7	73.1	77.3	82.3	87.3	91.9	95.6	100.2	104.0	107.7
72.5°	56.8	58.9	62.6	66.8	71.8	76.8	81.8	86.4	90.6	94.4	98.1
75°	45.9	48.4	52.2	56.8	62.2	66.8	71.8	76.4	81.0	85.2	88.5
77.5°	35.5	38.0	42.2	47.2	52.2	57.6	62.2	67.2	71.4	76.0	79.8
80°	25.9	28.8	33.0	38.0	43.0	48.4	53.4	58.0	62.6	66.8	71.0
82.5°	18.0	20.5	24.6	29.6	35.1	40.1	45.1	50.1	54.3	58.9	62.6
85°	10.0	12.9	17.5	22.1	27.6	32.6	37.6	42.6	46.8	51.4	55.1
87.5°	4.2	7.5	11.7	16.3	21.3	26.3	31.3	35.9	40.5	44.7	48.4
90°	0.0	2.9	6.7	11.3	16.3	21.3	25.9	30.5	35.1	39.3	42.6
92.5°	0.0	1.7	5.0	9.6	14.2	19.2	24.2	28.4	32.6	36.7	40.1
95°	0.0	0.8	4.2	8.4	12.9	17.5	22.1	26.3	30.5	34.2	37.6
97.5°	0.0	0.4	3.3	7.1	11.3	15.9	20.5	24.6	28.4	32.2	35.5
100°	0.0	0.0	2.5	5.8	10.0	14.2	18.4	22.5	26.3	30.1	33.4
102.5°	0.0	0.0	1.3	4.6	8.8	12.5	16.7	20.9	24.6	28.0	31.3
105°	0.0	0.0	0.8	3.8	7.1	11.3	15.0	18.8	22.5	25.9	29.2
107.5°	0.0	0.0	0.0	2.5	6.3	9.6	13.4	17.1	20.9	23.8	27.1
110°	0.0	0.0	0.0	1.7	5.0	8.4	12.1	15.5	18.8	22.1	25.1



TEST NUMBER: P231615

CATALOG NUMBER: S123-DR-LO-27-X-0048-1-U-DD-4-W

CANDELA DISTRIBUTION (continued):

	0°	5°	10°	15°	20°	25°	30°	35°	40°	45°	50°
112.5°	0.0	0.0	0.0	0.8	3.8	7.1	10.4	13.8	17.1	20.0	23.0
115°	0.0	0.0	0.0	0.0	2.5	5.8	8.8	12.1	15.5	18.4	20.9
117.5°	0.0	0.0	0.0	0.0	1.7	4.6	7.5	10.4	13.4	16.3	18.8
120°	0.0	0.0	0.0	0.0	0.4	3.3	5.8	8.8	11.7	14.2	17.1
122.5°	0.0	0.0	0.0	0.0	0.0	2.1	4.6	7.5	10.0	12.5	15.0
125°	0.0	0.0	0.0	0.0	0.0	0.8	3.3	5.8	8.4	10.9	12.9
127.5°	0.0	0.0	0.0	0.0	0.0	0.0	2.1	4.2	6.7	8.8	11.3
130°	0.0	0.0	0.0	0.0	0.0	0.0	0.8	2.9	5.0	7.1	9.2
132.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.7	3.8	5.4	7.5
135°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	2.1	4.2	5.8
137.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	2.5	4.2
140°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	2.5
142.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8
145°	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
147.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
150°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
152.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
155°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
157.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
160°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
162.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
165°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
167.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
170°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
172.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
175°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
177.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
180°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0



TEST NUMBER: P231615

CATALOG NUMBER: S123-DR-LO-27-X-0048-1-U-DD-4-W

CANDELA DISTRIBUTION (continued):

	55°	60°	65°	70°	75°	80°	85°	90°
0°	298.6	298.6	298.6	298.6	298.6	298.6	298.6	298.6
2.5°	297.7	298.1	298.6	298.6	298.6	298.6	298.1	298.1
5°	296.9	297.7	297.7	298.1	298.1	298.1	297.7	297.7
7.5°	295.6	296.1	296.5	296.5	296.9	296.9	296.5	296.1
10°	293.1	294.0	294.4	294.4	294.4	294.4	294.4	294.0
12.5°	290.2	290.6	291.0	291.0	291.0	291.5	291.0	290.6
15°	286.0	286.9	286.9	287.3	287.3	287.3	286.9	286.5
17.5°	281.0	281.9	282.3	282.3	282.3	282.3	281.9	281.4
20°	275.6	276.0	276.8	276.4	276.8	276.8	276.4	276.0
22.5°	269.3	269.7	270.6	270.2	271.0	271.0	270.6	270.6
25°	262.7	263.5	263.9	263.9	263.9	263.9	263.9	263.5
27.5°	255.6	256.0	256.8	257.2	257.2	257.2	257.2	257.2
30°	248.0	248.9	249.7	249.7	250.5	251.0	250.5	250.1
32.5°	240.1	241.4	242.2	242.6	243.4	243.9	243.4	243.4
35°	232.2	233.8	235.1	235.5	236.3	236.3	236.8	236.3
37.5°	224.7	226.3	227.2	228.4	229.2	230.1	229.7	229.2
40°	217.1	218.8	220.1	220.9	221.7	222.1	222.1	222.1
42.5°	208.8	210.9	212.1	213.4	214.6	215.0	215.0	215.0
45°	200.4	202.5	204.2	205.9	207.1	207.5	207.5	207.5
47.5°	192.5	194.6	196.3	197.9	199.2	199.6	200.0	200.0
50°	184.6	186.7	188.7	190.0	191.2	192.1	192.1	192.1
52.5°	175.8	177.9	180.0	181.6	183.3	183.7	184.6	184.6
55°	167.0	169.5	172.0	173.7	174.5	175.4	175.8	175.8
57.5°	158.3	160.3	162.4	164.9	166.2	167.0	167.4	167.9
60°	149.1	151.6	154.1	156.2	157.0	158.3	158.7	158.7
62.5°	139.5	142.0	144.9	146.6	148.2	149.1	149.5	149.9
65°	130.3	132.8	135.3	137.8	138.6	139.5	140.3	140.3
67.5°	120.7	123.2	125.7	127.8	129.0	130.3	131.1	130.7
70°	111.1	114.0	116.1	118.6	119.8	120.7	121.5	121.9
72.5°	101.5	104.4	106.9	109.0	110.2	111.1	111.9	112.3
75°	92.3	94.8	97.3	99.0	100.6	101.9	102.3	103.1
77.5°	82.7	86.0	88.1	90.6	91.4	92.7	93.1	94.0
80°	74.3	76.8	79.3	81.4	83.1	84.3	84.3	84.8
82.5°	66.0	68.5	71.0	73.5	74.7	76.0	76.4	76.4
85°	58.0	61.0	63.5	65.6	67.2	68.1	68.9	69.3
87.5°	51.8	54.3	56.8	58.5	60.1	61.0	61.8	61.8
90°	45.9	48.4	50.9	53.0	54.3	55.1	56.0	56.4
92.5°	43.4	45.9	48.4	50.1	51.8	52.6	53.0	53.4
95°	40.9	43.4	45.9	47.6	48.9	50.1	50.5	50.5
97.5°	38.4	40.9	43.4	45.1	46.4	47.2	48.0	48.0
100°	36.3	38.8	40.9	42.6	43.8	44.7	45.5	45.5
102.5°	33.8	36.3	38.4	40.1	41.3	42.2	43.0	43.0
105°	31.7	34.2	36.3	38.0	39.3	40.1	40.5	40.5
107.5°	29.6	32.2	34.2	35.5	36.7	37.6	38.4	38.4
110°	27.6	29.6	31.7	33.4	34.7	35.5	35.9	35.9



TEST NUMBER: P231615

CATALOG NUMBER: S123-DR-LO-27-X-0048-1-U-DD-4-W

CANDELA DISTRIBUTION (continued):

	55°	60°	65°	70°	75°	80°	85°	90°
112.5°	25.5	27.6	29.6	30.9	32.2	33.0	33.4	33.8
115°	23.4	25.5	27.1	28.8	30.1	30.5	31.3	31.3
117.5°	21.3	23.4	25.1	26.3	27.6	28.4	28.8	29.2
120°	19.2	20.9	23.0	24.2	25.5	25.9	26.7	26.7
122.5°	17.1	18.8	20.9	21.7	23.0	23.8	24.2	24.2
125°	15.0	17.1	18.4	19.6	20.9	21.3	21.7	22.1
127.5°	12.9	14.6	16.3	17.5	18.4	19.2	19.6	19.6
130°	10.9	12.5	14.2	15.5	16.3	16.7	17.1	17.5
132.5°	9.2	10.9	12.1	12.9	14.2	14.6	15.0	15.0
135°	7.1	8.8	10.0	10.9	11.7	12.5	12.5	12.9
137.5°	5.4	6.7	7.9	8.8	9.6	10.0	10.4	10.4
140°	3.8	5.0	5.8	6.7	7.5	7.9	8.4	8.4
142.5°	2.1	2.9	4.2	4.6	5.4	5.8	6.3	6.3
145°	0.4	1.3	2.1	2.9	3.3	3.8	4.2	4.2
147.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
150°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
152.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
155°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
157.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
160°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
162.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
165°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
167.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
170°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
172.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
175°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
177.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
180°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

(END OF REPORT)