

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: P231598

Luminaire Tested: **S121-DR-1-40-X-0048-1-U-DD-4-W**

Issue Date: 3/3/2020

Test Information

Test Method: LM-79-08
Report Number: P231598
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (P33907)
Test Lab: INNOVATION CENTER-P3
Issue Date: 3/3/2020
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: NEO-RAY
Catalog Number: S121-DR-1-40-X-0048-1-U-DD-4-W
Description: DEFINE 1 LED LINEAR DIRECT RECESSED LED LUMINAIRE WITH DROP LENS.
Light Source: 4000K CCT, 80 CRI LEDS
Ballast/Driver: ELECTRONIC DRIVER

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 2548.8 lumens
Efficiency: N/A
Efficacy: 91.4 lumens/watt
Spacing Criteria (0/90/45): 1.21 / 1.42 / 1.49
Luminous Opening: Rectangular w/ Sides (W: 0.1' x L: 3.92' x H: 0.08')
CIE Type: Semi-Direct

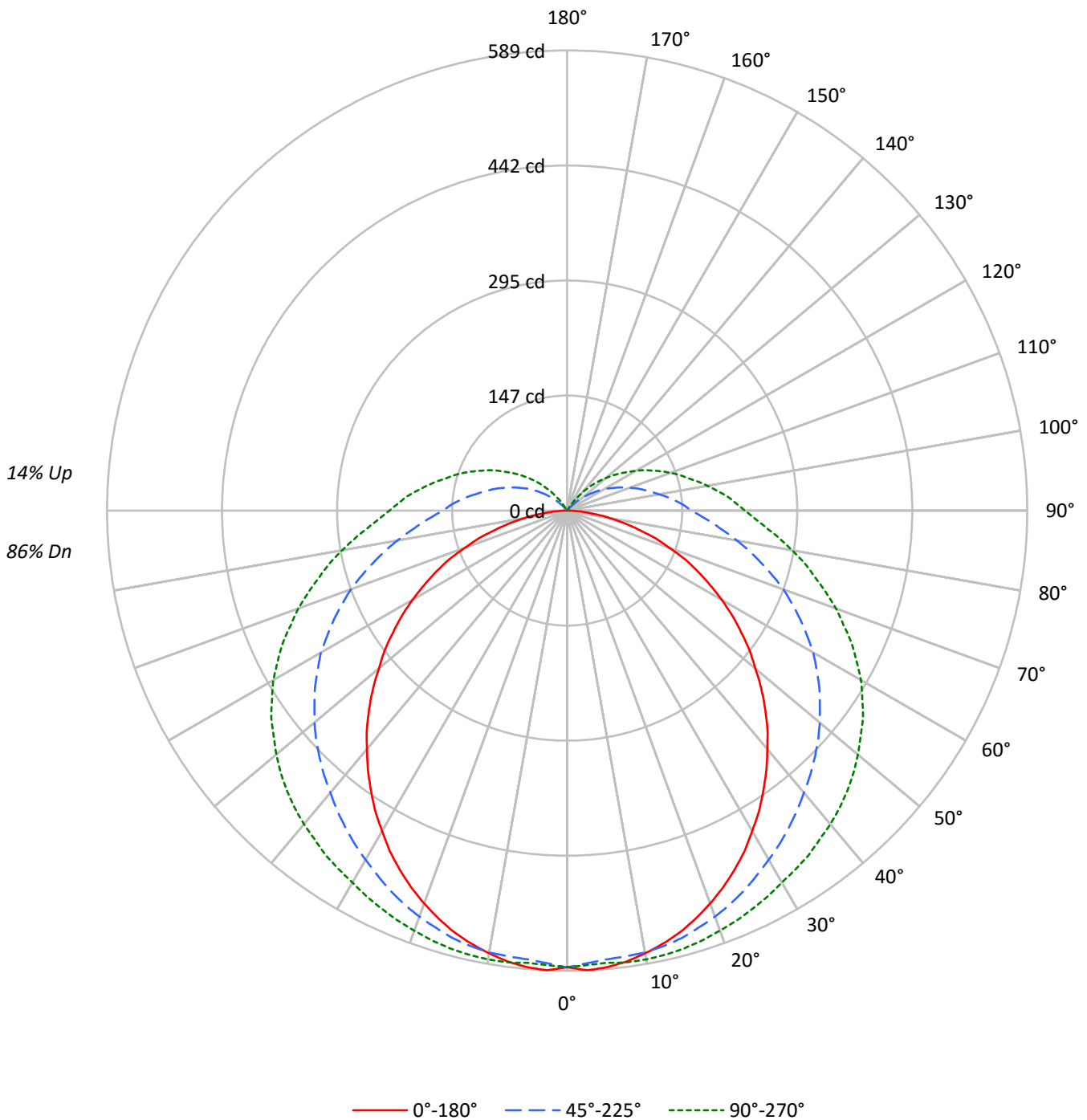
Input Watts (W): 27.9
Input Voltage (V): 120
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



TEST NUMBER: P231598

CATALOG NUMBER: S121-DR-1-40-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	116	116	116	116	112	112	112	112	104	104	104	96	96	96	90	90	90	86
1	103	97	91	86	98	93	88	84	86	82	79	80	77	74	74	72	69	66
2	92	83	75	68	88	79	72	66	74	68	62	68	63	59	63	59	56	53
3	83	72	62	55	80	69	61	54	64	57	51	59	53	49	55	50	46	43
4	76	63	53	46	72	61	52	45	56	49	43	52	46	41	48	43	39	36
5	69	56	46	39	66	54	45	38	50	42	36	47	40	35	43	38	33	31
6	64	50	40	34	61	48	39	33	45	37	32	42	35	30	39	33	29	26
7	59	45	36	29	57	44	35	29	41	33	28	38	31	27	36	30	25	23
8	55	41	32	26	53	40	31	26	37	30	25	35	28	24	33	27	23	20
9	51	37	29	23	49	36	28	23	34	27	22	32	26	21	30	24	20	18
10	48	34	26	21	46	33	26	21	31	25	20	30	23	19	28	22	18	16

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	16341	16341	16341
5°	16435	15357	15182
10°	16277	14713	14406
15°	16079	14079	13681
20°	15801	13449	13009
25°	15492	12860	12428
30°	15103	12302	11916
35°	14723	11811	11537
40°	14292	11353	11177
45°	13871	10970	10855
50°	13345	10600	10515
55°	12872	10233	10197
60°	12317	9859	9843
65°	11685	9398	9439
70°	10719	8957	8991
75°	9527	8412	8514
80°	8046	7922	8103
85°	5496	7479	7697



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	55.4	2.2
10°-20°	160.5	6.3
20°-30°	247.4	9.7
30°-40°	308.5	12.1
40°-50°	341.0	13.4
50°-60°	341.9	13.4
60°-70°	310.6	12.2
70°-80°	252.3	9.9
80°-90°	184.6	7.2
90°-100°	134.7	5.3
100°-110°	96.5	3.8
110°-120°	63.1	2.5
120°-130°	35.3	1.4
130°-140°	14.6	0.6
140°-150°	2.4	0.1
150°-160°	0.0	0.0
160°-170°	0.0	0.0
170°-180°	0.0	0.0
0°-30°	463.3	18.2
0°-40°	771.8	30.3
0°-60°	1454.7	57.1
0°-90°	2202.2	86.4
90°-120°	294.3	11.5
90°-150°	346.6	13.6
90°-180°	347.0	13.6
0°-180°	2548.8	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	584	584	584	584	584	
5°	587	583	577	582	581	56
15°	559	559	566	579	580	157
25°	507	518	536	558	562	233
35°	438	460	495	527	539	274
45°	358	395	448	494	507	276
55°	272	322	394	445	462	243
65°	185	249	329	384	402	183
75°	95	172	256	311	328	102
85°	21	102	187	240	256	25
90°	0	77	159	210	227	1
95°	0	61	140	189	206	0
105°	0	36	102	147	160	0
115°	0	15	69	109	121	0
125°	0	1	39	72	83	0
135°	0	0	12	38	48	0
145°	0	0	0	7	13	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: P231598

CATALOG NUMBER: S121-DR-1-40-X-0048-1-U-DD-4-W

CANDELA DISTRIBUTION (FULL):

	0°	5°	10°	15°	20°	25°	30°	35°	40°	45°	50°
0°	584.5	584.5	584.5	584.5	584.5	584.5	584.5	584.5	584.5	584.5	584.5
2.5°	588.9	586.7	584.5	585.6	585.6	586.7	584.5	584.5	582.2	580.0	580.0
5°	586.7	584.5	581.1	582.2	582.2	583.3	582.2	581.1	578.9	576.6	577.7
7.5°	582.2	580.0	576.6	577.7	577.7	577.7	577.7	577.7	576.6	575.5	576.6
10°	575.5	573.3	571.0	571.0	571.0	573.3	573.3	574.4	574.4	574.4	576.6
12.5°	567.7	565.4	563.2	563.2	564.3	567.7	568.8	569.9	571.0	571.0	573.3
15°	558.7	555.3	553.1	555.3	556.5	560.9	563.2	564.3	565.4	566.5	569.9
17.5°	547.5	545.3	541.9	544.2	547.5	553.1	555.3	557.6	559.8	559.8	564.3
20°	535.2	533.0	529.6	534.1	538.6	543.0	546.4	548.6	550.9	553.1	557.6
22.5°	521.8	518.4	517.3	522.9	527.4	533.0	536.3	539.7	541.9	545.3	550.9
25°	507.2	503.8	503.8	509.4	515.0	520.6	525.1	529.6	531.8	536.3	541.9
27.5°	491.5	488.2	489.3	496.0	500.5	508.3	512.8	518.4	521.8	526.2	533.0
30°	473.6	470.3	472.5	480.3	487.0	494.9	500.5	505.0	510.6	516.2	524.0
32.5°	456.8	452.3	455.7	464.7	471.4	480.3	487.0	492.6	499.4	506.1	513.9
35°	437.8	434.4	438.9	447.9	455.7	464.7	472.5	479.2	487.0	494.9	503.8
37.5°	418.8	414.3	421.0	429.9	440.0	449.0	457.9	464.7	473.6	483.7	493.8
40°	398.6	395.2	403.1	413.2	422.1	432.2	442.3	450.1	461.3	471.4	482.6
42.5°	379.6	376.2	385.2	394.1	405.3	416.5	427.7	435.5	447.9	460.2	471.4
45°	358.3	356.0	365.0	376.2	388.5	400.8	410.9	422.1	435.5	447.9	460.2
47.5°	337.0	334.8	344.9	357.2	369.5	382.9	395.2	408.7	422.1	435.5	447.9
50°	314.6	314.6	325.8	338.1	350.5	366.1	378.4	394.1	407.6	422.1	434.4
52.5°	294.5	294.5	305.7	318.0	332.5	348.2	363.9	378.4	394.1	407.6	422.1
55°	272.1	274.3	286.6	298.9	313.5	330.3	347.1	362.8	379.6	394.1	407.6
57.5°	250.8	254.2	265.4	278.8	295.6	313.5	330.3	347.1	362.8	378.4	393.0
60°	228.4	232.9	245.2	259.8	276.6	295.6	313.5	330.3	347.1	363.9	377.3
62.5°	206.0	211.6	223.9	238.5	257.5	276.6	295.6	312.4	330.3	346.0	360.5
65°	184.7	190.3	202.7	218.3	238.5	258.6	277.7	295.6	313.5	329.2	344.9
67.5°	163.5	169.1	182.5	199.3	219.5	239.6	258.6	277.7	295.6	311.3	325.8
70°	138.8	147.8	161.2	179.1	200.4	220.6	240.7	258.6	276.6	294.5	309.0
72.5°	118.7	126.5	141.1	160.1	180.3	201.5	221.7	240.7	258.6	275.4	290.0
75°	95.2	104.1	119.8	140.0	161.2	182.5	202.7	221.7	239.6	256.4	272.1
77.5°	75.0	84.0	100.8	120.9	142.2	163.5	184.7	203.8	221.7	238.5	253.0
80°	56.0	64.9	82.9	103.0	125.4	146.7	166.8	185.9	203.8	220.6	235.1
82.5°	38.1	47.0	66.1	86.2	107.5	128.8	148.9	167.9	185.9	202.7	218.3
85°	21.3	32.5	50.4	70.5	91.8	113.1	133.2	153.4	170.2	187.0	202.7
87.5°	9.0	21.3	38.1	57.1	78.4	99.6	119.8	137.7	156.8	172.4	187.0
90°	0.0	11.2	26.9	45.9	67.2	87.3	107.5	125.4	143.3	159.0	173.5
92.5°	0.0	6.7	21.3	39.2	59.3	79.5	98.5	117.6	134.4	150.0	164.6
95°	0.0	3.4	15.7	33.6	51.5	70.5	89.6	107.5	124.3	140.0	153.4
97.5°	0.0	1.1	12.3	26.9	44.8	63.8	81.7	99.6	115.3	129.9	143.3
100°	0.0	0.0	9.0	22.4	39.2	56.0	73.9	90.7	106.4	119.8	133.2
102.5°	0.0	0.0	4.5	17.9	33.6	49.3	66.1	81.7	97.4	110.8	124.3
105°	0.0	0.0	2.2	13.4	28.0	43.7	59.3	73.9	88.5	101.9	115.3
107.5°	0.0	0.0	0.0	9.0	22.4	36.9	52.6	67.2	81.7	94.1	105.2
110°	0.0	0.0	0.0	5.6	17.9	31.4	45.9	59.3	72.8	85.1	97.4



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CANDELA DISTRIBUTION (continued):

	0°	5°	10°	15°	20°	25°	30°	35°	40°	45°	50°
112.5°	0.0	0.0	0.0	2.2	13.4	25.8	39.2	52.6	64.9	77.3	88.5
115°	0.0	0.0	0.0	0.0	9.0	20.2	33.6	45.9	58.2	69.4	80.6
117.5°	0.0	0.0	0.0	0.0	4.5	15.7	26.9	39.2	50.4	61.6	71.7
120°	0.0	0.0	0.0	0.0	1.1	11.2	21.3	33.6	43.7	54.9	63.8
122.5°	0.0	0.0	0.0	0.0	0.0	5.6	15.7	26.9	36.9	47.0	56.0
125°	0.0	0.0	0.0	0.0	0.0	2.2	11.2	20.2	30.2	39.2	49.3
127.5°	0.0	0.0	0.0	0.0	0.0	0.0	5.6	14.6	23.5	32.5	41.4
130°	0.0	0.0	0.0	0.0	0.0	0.0	2.2	9.0	17.9	25.8	33.6
132.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.5	11.2	19.0	25.8
135°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1	5.6	12.3	19.0
137.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1	6.7	12.3
140°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.2	6.7
142.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1
145°	0.0	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



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CATALOG NUMBER: S121-DR-1-40-X-0048-1-U-DD-4-W

CANDELA DISTRIBUTION (continued):

	55°	60°	65°	70°	75°	80°	85°	90°
0°	584.5	584.5	584.5	584.5	584.5	584.5	584.5	584.5
2.5°	582.2	583.3	584.5	583.3	583.3	584.5	583.3	582.2
5°	580.0	581.1	582.2	582.2	583.3	583.3	582.2	581.1
7.5°	580.0	582.2	583.3	584.5	584.5	585.6	584.5	583.3
10°	580.0	581.1	583.3	584.5	584.5	585.6	584.5	583.3
12.5°	577.7	580.0	582.2	582.2	583.3	584.5	583.3	582.2
15°	573.3	575.5	578.9	580.0	581.1	581.1	580.0	580.0
17.5°	568.8	571.0	574.4	575.5	576.6	577.7	576.6	576.6
20°	562.1	565.4	568.8	571.0	572.1	573.3	573.3	572.1
22.5°	555.3	559.8	563.2	564.3	566.5	568.8	567.7	567.7
25°	547.5	552.0	556.5	558.7	560.9	563.2	562.1	562.1
27.5°	539.7	544.2	548.6	552.0	555.3	556.5	556.5	556.5
30°	529.6	536.3	540.8	544.2	547.5	549.7	549.7	549.7
32.5°	520.6	527.4	533.0	536.3	540.8	543.0	544.2	544.2
35°	511.7	518.4	525.1	529.6	534.1	537.4	537.4	538.6
37.5°	501.6	510.6	517.3	522.9	527.4	530.7	531.8	530.7
40°	492.6	501.6	508.3	515.0	519.5	522.9	524.0	524.0
42.5°	481.5	491.5	499.4	506.1	511.7	515.0	516.2	516.2
45°	471.4	481.5	490.4	497.1	501.6	505.0	507.2	507.2
47.5°	460.2	470.3	478.1	485.9	491.5	494.9	496.0	497.1
50°	447.9	457.9	465.8	474.7	480.3	483.7	484.8	485.9
52.5°	434.4	444.5	454.6	462.4	468.0	472.5	473.6	473.6
55°	421.0	431.1	441.1	449.0	455.7	459.1	461.3	462.4
57.5°	405.3	416.5	426.6	435.5	441.1	445.6	447.9	447.9
60°	390.8	402.0	412.0	421.0	426.6	431.1	432.2	434.4
62.5°	374.0	385.2	396.4	404.2	409.8	414.3	416.5	417.6
65°	357.2	369.5	380.7	387.4	393.0	398.6	400.8	402.0
67.5°	339.3	351.6	361.6	370.6	375.1	380.7	382.9	382.9
70°	322.5	334.8	343.7	351.6	358.3	362.8	365.0	366.1
72.5°	304.5	315.7	325.8	333.7	339.3	343.7	347.1	347.1
75°	284.4	296.7	306.8	314.6	321.3	325.8	328.1	328.1
77.5°	267.6	278.8	287.8	296.7	303.4	307.9	310.1	311.3
80°	248.6	259.8	269.8	277.7	284.4	288.9	291.1	292.2
82.5°	231.8	243.0	251.9	260.9	266.5	271.0	273.2	274.3
85°	215.0	226.2	236.2	243.0	249.7	253.0	256.4	256.4
87.5°	200.4	210.5	220.6	227.3	234.0	238.5	240.7	240.7
90°	185.9	197.1	206.0	215.0	220.6	225.1	226.2	227.3
92.5°	175.8	187.0	195.9	203.8	209.4	212.7	216.1	216.1
95°	165.7	175.8	185.9	192.6	198.2	202.7	204.9	206.0
97.5°	155.6	165.7	174.7	181.4	187.0	191.5	192.6	193.7
100°	145.6	155.6	163.5	170.2	175.8	179.1	182.5	182.5
102.5°	135.5	145.6	153.4	160.1	165.7	169.1	171.3	171.3
105°	125.4	135.5	143.3	150.0	154.5	159.0	160.1	160.1
107.5°	116.4	126.5	134.4	140.0	144.4	148.9	151.2	151.2
110°	107.5	116.4	124.3	129.9	135.5	138.8	141.1	141.1



TEST NUMBER: P231598

CATALOG NUMBER: S121-DR-1-40-X-0048-1-U-DD-4-W

CANDELA DISTRIBUTION (continued):

	55°	60°	65°	70°	75°	80°	85°	90°
112.5°	98.5	107.5	115.3	120.9	125.4	128.8	131.0	131.0
115°	89.6	98.5	105.2	112.0	116.4	119.8	120.9	120.9
117.5°	81.7	89.6	96.3	101.9	106.4	109.7	112.0	112.0
120°	72.8	80.6	87.3	92.9	97.4	99.6	101.9	101.9
122.5°	64.9	71.7	78.4	84.0	87.3	90.7	92.9	91.8
125°	57.1	63.8	69.4	75.0	78.4	81.7	82.9	82.9
127.5°	48.1	54.9	61.6	66.1	69.4	72.8	73.9	73.9
130°	40.3	47.0	52.6	57.1	60.5	62.7	64.9	64.9
132.5°	33.6	39.2	44.8	48.1	51.5	53.7	56.0	56.0
135°	25.8	31.4	35.8	40.3	43.7	45.9	47.0	48.1
137.5°	17.9	23.5	28.0	32.5	34.7	36.9	38.1	38.1
140°	11.2	15.7	20.2	23.5	25.8	28.0	29.1	30.2
142.5°	4.5	9.0	12.3	15.7	17.9	19.0	20.2	20.2
145°	0.0	2.2	5.6	7.8	10.1	12.3	12.3	13.4
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)