

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: P231633

Luminaire Tested: **S124-DR-1-35-X-0048-1-U-DD-4-W**

Issue Date: 3/3/2020

Test Information

Test Method: LM-79-08
Report Number: P231633
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (P33916)
Test Lab: INNOVATION CENTER-P3
Issue Date: 3/3/2020
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: NEO-RAY
Catalog Number: S124-DR-1-35-X-0048-1-U-DD-4-W
Description: DEFINE 4 LED LINEAR DIRECT RECESSED LED LUMINAIRE WITH DROP LENS.
Light Source: 3500K CCT, 80 CRI LEDS
Ballast/Driver: ELECTRONIC DRIVER

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 2682.1 lumens
Efficiency: N/A
Efficacy: 96.1 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 1.21 / 1.34
Luminous Opening: Rectangular w/ Sides (W: 0.31' x L: 3.92' x H: 0.08')
CIE Type: Direct

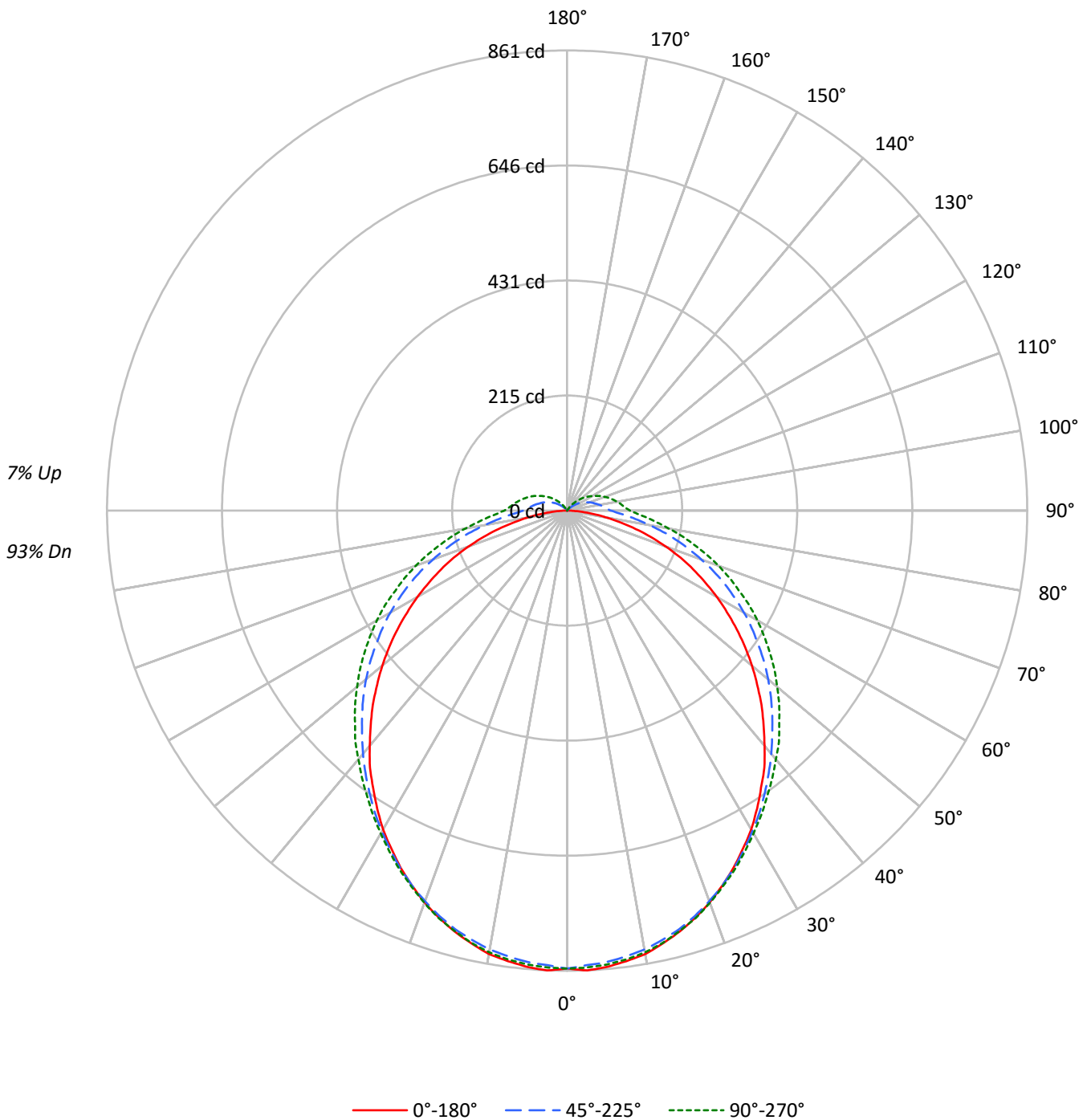
Input Watts (W): 27.9
Input Voltage (V): 120
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



TEST NUMBER: P231633

CATALOG NUMBER: S124-DR-1-35-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	114	114	114	114	107	107	107	101	101	101	96	96	96	93
1	106	101	96	92	103	98	93	90	92	89	86	87	84	82	82	80	78	76
2	96	87	80	74	93	85	78	72	80	75	70	76	71	67	72	68	65	62
3	87	76	68	61	84	74	66	60	70	64	58	67	61	56	63	58	54	52
4	80	67	58	51	77	66	57	51	62	55	49	59	53	48	56	51	47	44
5	73	60	51	44	71	59	50	44	56	48	43	53	47	41	51	45	40	38
6	68	54	45	38	65	53	44	38	50	43	37	48	41	36	46	40	35	33
7	63	49	40	34	61	48	40	34	46	38	33	44	37	32	42	36	31	29
8	58	45	36	30	56	44	36	30	42	35	29	40	34	29	38	33	28	26
9	55	41	33	27	53	40	32	27	39	31	26	37	31	26	35	30	25	24
10	51	38	30	25	50	37	30	24	36	29	24	34	28	24	33	27	23	21

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	7678	7678	7678
5°	7693	7493	7490
10°	7638	7319	7288
15°	7519	7125	7039
20°	7381	6897	6778
25°	7216	6656	6507
30°	7040	6406	6240
35°	6821	6160	5997
40°	6602	5923	5787
45°	6379	5697	5594
50°	6138	5490	5403
55°	5880	5258	5206
60°	5602	5043	5007
65°	5280	4775	4754
70°	4839	4457	4516
75°	4263	4119	4212
80°	3440	3702	3927
85°	2365	3420	3742



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	81.0	3.0
10°-20°	229.5	8.6
20°-30°	341.0	12.7
30°-40°	403.7	15.1
40°-50°	417.8	15.6
50°-60°	386.7	14.4
60°-70°	314.7	11.7
70°-80°	213.6	8.0
80°-90°	114.8	4.3
90°-100°	68.3	2.5
100°-110°	50.3	1.9
110°-120°	33.3	1.2
120°-130°	18.7	0.7
130°-140°	7.6	0.3
140°-150°	1.2	0.0
150°-160°	0.0	0.0
160°-170°	0.0	0.0
170°-180°	0.0	0.0
0°-30°	651.4	24.3
0°-40°	1055.1	39.3
0°-60°	1859.6	69.3
0°-90°	2502.7	93.3
90°-120°	151.9	5.7
90°-150°	179.4	6.7
90°-180°	179.0	6.7
0°-180°	2682.1	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	857	857	857	857	857	
5°	857	855	848	854	852	81
15°	815	815	811	816	814	230
25°	737	740	738	744	742	339
35°	633	640	645	651	652	396
45°	514	527	543	557	561	396
55°	388	411	436	456	462	347
65°	260	291	325	348	355	258
75°	133	169	211	236	245	141
85°	29	70	112	140	149	33
90°	0	39	81	108	118	2
95°	0	31	70	96	104	0
105°	0	19	53	76	85	0
115°	0	8	36	58	65	0
125°	0	1	21	38	45	0
135°	0	0	7	20	25	0
145°	0	0	0	3	7	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: P231633

CATALOG NUMBER: S124-DR-1-35-X-0048-1-U-DD-4-W

CANDELA DISTRIBUTION (FULL):

	0°	5°	10°	15°	20°	25°	30°	35°	40°	45°	50°
0°	856.9	856.9	856.9	856.9	856.9	856.9	856.9	856.9	856.9	856.9	856.9
2.5°	861.2	859.0	856.9	855.8	856.9	858.0	856.9	855.8	853.6	851.4	851.4
5°	856.9	854.7	852.5	852.5	854.7	854.7	853.6	852.5	850.3	848.1	848.1
7.5°	850.3	848.1	847.0	847.0	848.1	848.1	848.1	847.0	844.8	841.5	843.7
10°	842.6	840.4	838.2	838.2	839.3	839.3	839.3	838.2	836.0	833.8	834.9
12.5°	829.4	827.2	826.1	826.1	827.2	828.3	827.2	827.2	825.0	822.8	823.9
15°	815.1	814.0	811.8	812.9	814.0	815.1	815.1	814.0	811.8	810.7	811.8
17.5°	798.6	797.5	796.4	796.4	797.5	798.6	798.6	798.6	796.4	795.3	796.4
20°	780.0	777.8	777.8	778.9	780.0	781.1	781.1	780.0	778.9	777.8	780.0
22.5°	759.1	758.0	756.9	758.0	761.3	761.3	762.4	760.2	759.1	759.1	760.2
25°	737.1	736.0	734.9	737.1	739.3	740.4	740.4	740.4	739.3	738.2	740.4
27.5°	712.9	712.9	710.7	712.9	716.2	717.3	717.3	717.3	716.2	716.2	717.3
30°	688.8	687.7	685.5	688.8	691.0	694.3	694.3	694.3	693.2	693.2	695.4
32.5°	661.3	661.3	660.2	663.5	666.8	669.0	669.0	669.0	667.9	670.1	672.3
35°	632.8	631.7	632.8	634.9	638.2	641.5	642.6	642.6	642.6	644.8	647.0
37.5°	606.4	603.1	604.2	607.5	610.8	614.1	616.3	615.2	616.3	619.6	621.8
40°	574.5	573.4	575.6	580.0	583.3	586.6	587.7	588.8	591.0	594.3	597.6
42.5°	543.8	544.9	546.0	551.5	554.8	559.2	560.2	562.4	564.6	567.9	572.3
45°	514.1	513.0	516.3	519.6	525.1	529.5	532.8	533.9	538.3	542.7	546.0
47.5°	482.3	484.5	484.5	491.0	497.6	502.0	504.2	507.5	511.9	517.4	520.7
50°	451.5	451.5	455.9	461.4	466.9	472.4	475.7	480.1	485.5	491.0	495.4
52.5°	419.6	420.7	424.0	430.6	437.2	442.7	448.2	453.7	458.1	464.7	469.1
55°	387.8	388.9	394.4	401.0	407.6	414.1	419.6	425.1	431.7	436.1	441.6
57.5°	354.8	357.0	363.6	370.2	377.9	383.4	391.1	397.7	404.3	409.8	416.3
60°	324.1	325.2	330.7	339.4	344.9	353.7	361.4	368.0	374.6	382.3	387.8
62.5°	291.1	293.3	299.9	307.6	315.3	324.1	331.8	339.4	346.0	353.7	359.2
65°	260.4	262.5	268.0	275.7	285.6	295.5	303.2	309.8	317.5	325.2	330.7
67.5°	229.6	231.8	237.3	245.0	254.9	263.6	273.5	281.2	288.9	296.6	303.2
70°	195.5	198.8	205.4	215.3	224.1	234.0	242.8	251.6	259.3	266.9	273.5
72.5°	163.7	167.0	175.8	184.6	194.4	204.3	214.2	221.9	231.8	238.4	245.0
75°	132.9	137.3	145.0	153.8	163.7	174.7	183.5	194.4	203.2	210.9	216.4
77.5°	102.2	107.7	115.3	125.2	135.1	146.1	156.0	164.8	174.7	183.5	190.0
80°	74.7	79.1	87.9	97.8	109.9	119.7	129.6	139.5	148.3	156.0	164.8
82.5°	50.5	54.9	63.7	73.6	84.6	95.6	106.6	115.3	124.1	132.9	140.6
85°	28.6	34.1	42.8	52.7	64.8	74.7	84.6	94.5	103.3	112.0	119.7
87.5°	12.1	17.6	26.4	36.3	46.1	57.1	67.0	76.9	85.7	94.5	101.1
90°	0.0	5.5	13.2	23.1	34.1	43.9	53.8	63.7	72.5	81.3	87.9
92.5°	0.0	3.3	9.9	19.8	29.7	39.5	48.3	58.2	65.9	74.7	81.3
95°	0.0	2.2	7.7	16.5	26.4	35.2	45.0	53.8	62.6	70.3	76.9
97.5°	0.0	1.1	6.6	14.3	23.1	31.9	41.7	50.5	58.2	65.9	72.5
100°	0.0	0.0	4.4	12.1	19.8	28.6	37.3	46.1	53.8	61.5	68.1
102.5°	0.0	1.1	2.2	9.9	17.6	26.4	34.1	42.8	50.5	57.1	63.7
105°	0.0	0.0	1.1	6.6	14.3	23.1	30.8	38.4	46.1	52.7	59.3
107.5°	0.0	0.0	0.0	4.4	12.1	19.8	27.5	35.2	41.7	49.4	54.9
110°	0.0	0.0	0.0	2.2	8.8	16.5	24.2	30.8	38.4	45.0	50.5



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CATALOG NUMBER: S124-DR-1-35-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	1.1	6.6	13.2	20.9	27.5	34.1	40.6	46.1
115°	0.0	1.1	1.1	0.0	4.4	11.0	17.6	24.2	30.8	36.3	41.7
117.5°	0.0	0.0	0.0	0.0	2.2	7.7	14.3	20.9	26.4	33.0	37.3
120°	0.0	0.0	0.0	0.0	1.1	5.5	11.0	17.6	23.1	28.6	34.1
122.5°	0.0	0.0	0.0	0.0	0.0	3.3	7.7	13.2	19.8	25.3	29.7
125°	0.0	0.0	0.0	0.0	0.0	1.1	5.5	9.9	15.4	20.9	25.3
127.5°	0.0	0.0	0.0	0.0	0.0	0.0	2.2	7.7	12.1	16.5	20.9
130°	0.0	0.0	0.0	0.0	0.0	0.0	1.1	4.4	8.8	13.2	17.6
132.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.2	5.5	9.9	13.2
135°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1	2.2	6.6	9.9
137.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1	3.3	6.6
140°	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1	3.3
142.5°	1.1	1.1	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1
145°	0.0	1.1	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: P231633

CATALOG NUMBER: S124-DR-1-35-X-0048-1-U-DD-4-W

CANDELA DISTRIBUTION (continued):

	55°	60°	65°	70°	75°	80°	85°	90°
0°	856.9	856.9	856.9	856.9	856.9	856.9	856.9	856.9
2.5°	853.6	856.9	856.9	856.9	856.9	856.9	856.9	855.8
5°	851.4	853.6	853.6	853.6	853.6	853.6	853.6	852.5
7.5°	845.9	848.1	849.2	849.2	849.2	849.2	848.1	847.0
10°	838.2	839.3	840.4	840.4	840.4	840.4	839.3	839.3
12.5°	827.2	828.3	829.4	829.4	829.4	829.4	828.3	828.3
15°	814.0	815.1	816.2	816.2	816.2	816.2	815.1	814.0
17.5°	799.7	800.8	800.8	800.8	800.8	799.7	798.6	799.7
20°	781.1	782.2	783.3	783.3	783.3	783.3	781.1	781.1
22.5°	763.5	764.6	764.6	763.5	764.6	763.5	762.4	761.3
25°	741.5	742.6	743.7	743.7	744.8	743.7	741.5	741.5
27.5°	719.5	721.7	720.6	720.6	721.7	720.6	719.5	719.5
30°	697.6	698.7	698.7	698.7	699.8	699.8	697.6	697.6
32.5°	673.4	674.5	675.6	676.7	676.7	676.7	675.6	675.6
35°	649.2	650.3	651.4	651.4	653.6	654.7	653.6	652.5
37.5°	624.0	626.2	628.4	629.5	629.5	630.6	630.6	630.6
40°	600.9	602.0	604.2	606.4	606.4	608.6	607.5	607.5
42.5°	574.5	578.9	580.0	584.4	584.4	584.4	584.4	586.6
45°	550.4	552.6	555.9	558.1	560.2	560.2	560.2	561.3
47.5°	526.2	529.5	530.6	533.9	536.1	537.2	537.2	538.3
50°	499.8	503.1	507.5	509.7	510.8	511.9	513.0	513.0
52.5°	473.5	477.9	481.2	484.5	485.5	486.6	486.6	488.8
55°	447.1	451.5	454.8	458.1	461.4	462.5	462.5	462.5
57.5°	421.8	425.1	428.4	432.8	433.9	435.0	437.2	437.2
60°	393.3	397.7	403.2	405.4	408.7	409.8	409.8	410.8
62.5°	365.8	371.3	374.6	377.9	381.2	383.4	383.4	384.5
65°	336.1	341.6	347.1	349.3	352.6	354.8	355.9	354.8
67.5°	308.7	315.3	318.6	323.0	325.2	326.3	328.5	328.5
70°	281.2	285.6	291.1	293.3	296.6	297.7	299.9	301.0
72.5°	252.7	257.1	261.4	265.8	269.1	270.2	273.5	273.5
75°	224.1	230.7	234.0	238.4	241.7	243.9	245.0	245.0
77.5°	196.6	203.2	207.6	212.0	215.3	217.5	218.6	219.7
80°	170.3	176.9	182.4	186.7	188.9	191.1	192.2	193.3
82.5°	148.3	152.7	158.2	163.7	165.9	168.1	169.2	169.2
85°	126.3	132.9	138.4	141.7	145.0	147.2	148.3	149.4
87.5°	107.7	114.2	118.6	123.0	126.3	129.6	130.7	130.7
90°	94.5	101.1	105.5	109.9	113.1	115.3	116.4	117.5
92.5°	87.9	93.4	98.9	103.3	105.5	107.7	109.9	109.9
95°	83.5	89.0	94.5	97.8	101.1	103.3	104.4	104.4
97.5°	79.1	84.6	89.0	93.4	96.7	97.8	98.9	100.0
100°	74.7	79.1	84.6	87.9	91.2	93.4	94.5	94.5
102.5°	70.3	74.7	80.2	83.5	85.7	87.9	89.0	90.1
105°	64.8	70.3	74.7	78.0	81.3	83.5	84.6	84.6
107.5°	60.4	65.9	70.3	73.6	76.9	78.0	79.1	80.2
110°	56.0	60.4	65.9	69.2	71.4	73.6	74.7	74.7



TEST NUMBER: P231633

CATALOG NUMBER: S124-DR-1-35-X-0048-1-U-DD-4-W

CANDELA DISTRIBUTION (continued):

	55°	60°	65°	70°	75°	80°	85°	90°
112.5°	51.6	56.0	60.4	63.7	65.9	68.1	69.2	70.3
115°	47.2	51.6	56.0	59.3	61.5	63.7	64.8	64.8
117.5°	42.8	47.2	51.6	53.8	56.0	58.2	59.3	59.3
120°	38.4	42.8	46.1	49.4	51.6	53.8	53.8	54.9
122.5°	34.1	38.4	41.7	45.0	47.2	48.3	49.4	49.4
125°	29.7	34.1	37.3	39.5	41.7	43.9	43.9	45.0
127.5°	25.3	28.6	31.9	35.2	37.3	38.4	39.5	39.5
130°	20.9	24.2	27.5	30.8	31.9	33.0	34.1	35.2
132.5°	16.5	19.8	23.1	25.3	27.5	28.6	29.7	29.7
135°	13.2	16.5	18.7	20.9	23.1	24.2	24.2	25.3
137.5°	9.9	12.1	14.3	16.5	17.6	18.7	19.8	19.8
140°	5.5	7.7	9.9	12.1	13.2	14.3	15.4	15.4
142.5°	2.2	4.4	5.5	7.7	8.8	9.9	11.0	11.0
145°	0.0	1.1	2.2	3.3	4.4	5.5	6.6	6.6
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)